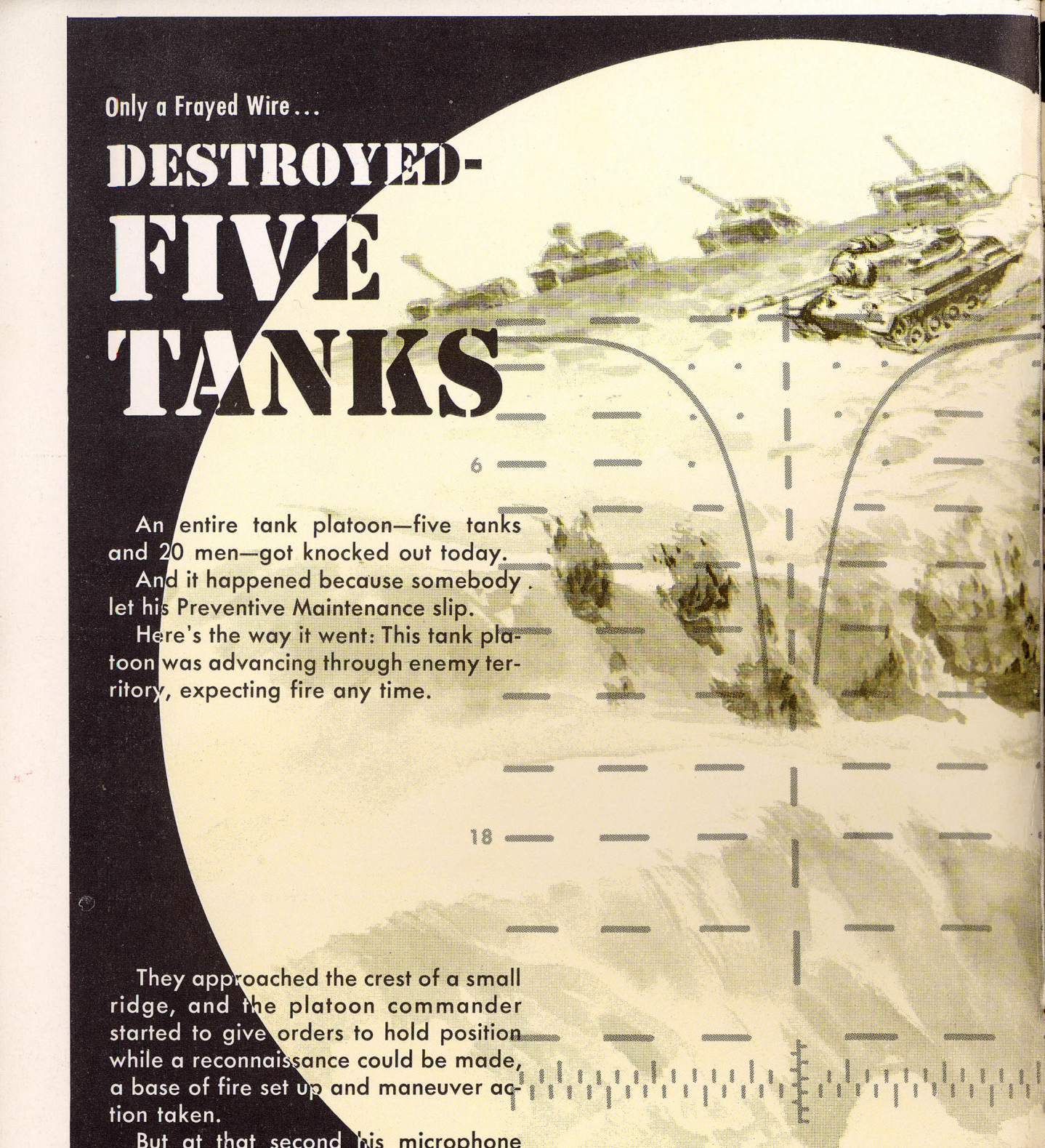
Issue 86
PS
1960 Series
THE PREVENTIVE MAINTENANCE MONTHLY
NOW, WHERE WUS WE 'AFFORE COMPANY DROPPED IN ON US?
WE WUS SOB LUBIN' THE PIECE.
Will Eisner

Only a Frayed Wire...

DESTROYED-
FIVE TANKS



An entire tank platoon—five tanks and 20 men—got knocked out today.

And it happened because somebody let his Preventive Maintenance slip.

Here's the way it went: This tank platoon was advancing through enemy territory, expecting fire any time.

They approached the crest of a small ridge, and the platoon commander started to give orders to hold position while a reconnaissance could be made, a base of fire set up and maneuver action taken.

But at that second his microphone quit on him... a frayed wire went. Long use and rough handling had caused it, but it wasn't even noticed.

He couldn't even stop his own tank. Over the crest they went—all five.

And the enemy guns went—1...2...3...4...5. Scratch all five.

If the radio man had really checked out his radio gear, including all the wires and connections and found the frayed wire... and if the tank commander had made sure his tank's radio equipment was top-notch, they'd made it all right.

Too late. The battle was lost.

Only a Frayed Wire...

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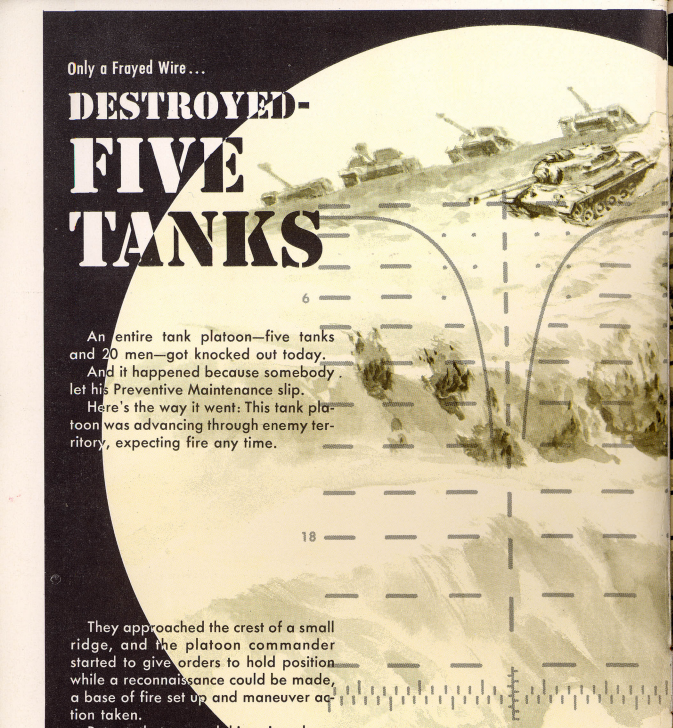

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PS Magazine,
Raritan Arsenal,
Metuchen, New Jersey.

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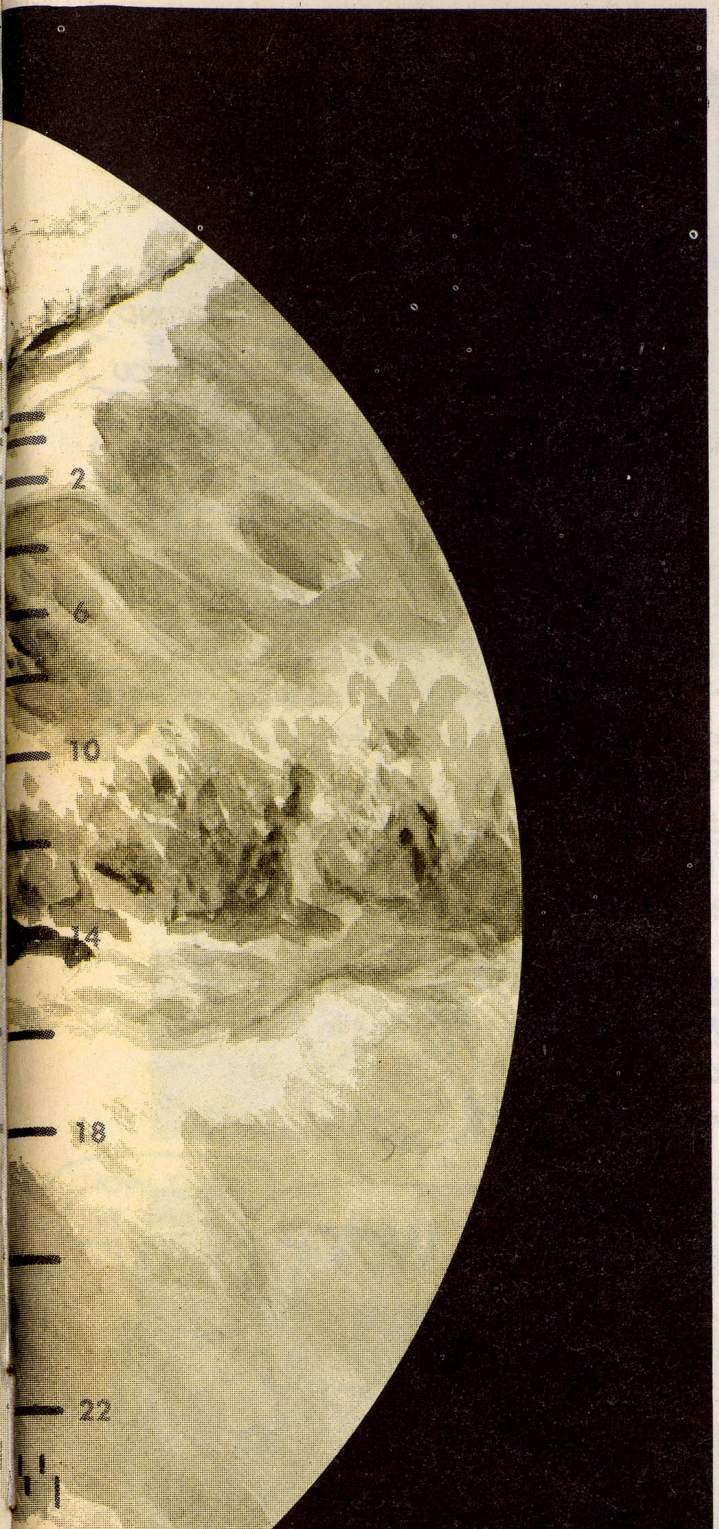

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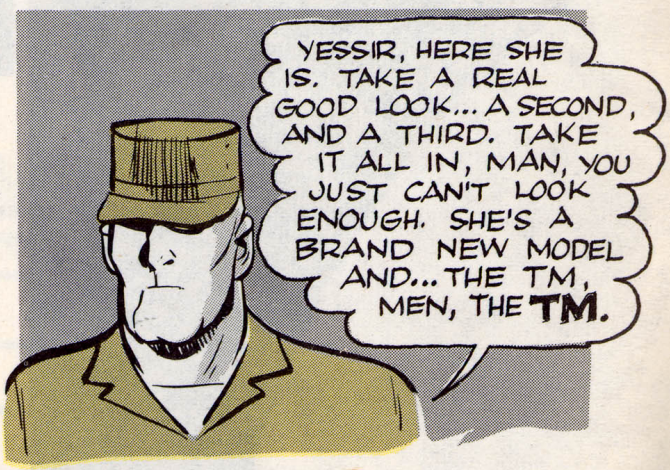
YOUR NEW

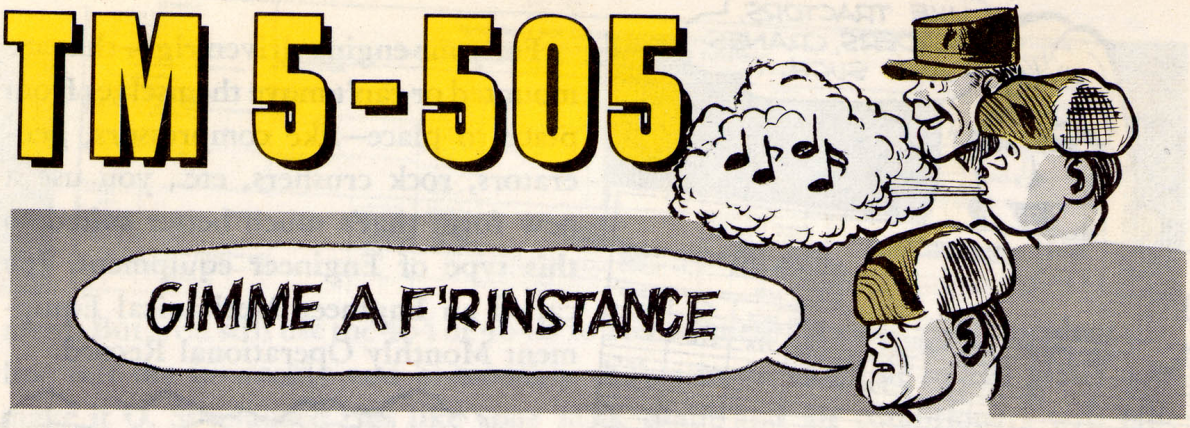


Give her the glad eye and a big welcome. She's everybody's sweetheart and will be with us for awhile to come. Her full name's "Maintenance of Engineer Equipment", but she's lots better known as TM 5-505 (Aug 1959).

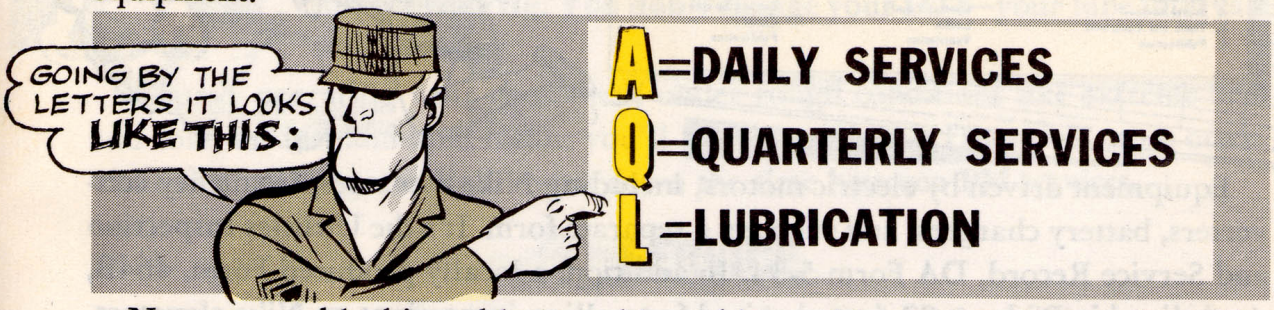
So, man, get with it.

This lil' TM's really stacked. She's the answer to your Engineer Maintenance problems. Not only has she got a lot of the same stuff as the old "505", but she has some real important ideas of her own—all new, too.

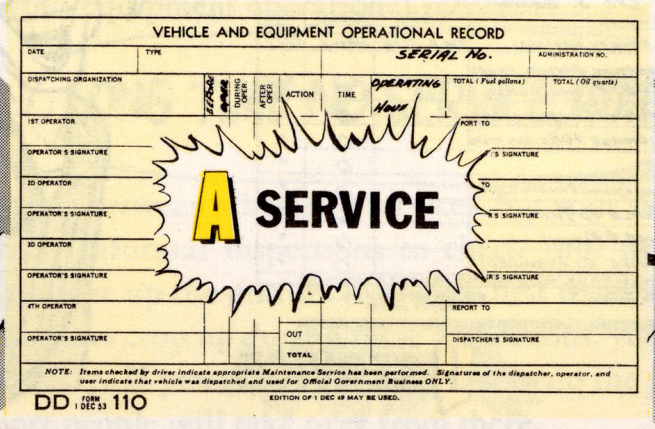
TM 5-505



Like your new **A-Q-L** organizational PM services. It works out just about the same way as the system you use for your Ordnance equipment. As a matter of fact, you can use the same DA Form 460 for both your Engineer and Ordnance equipment.

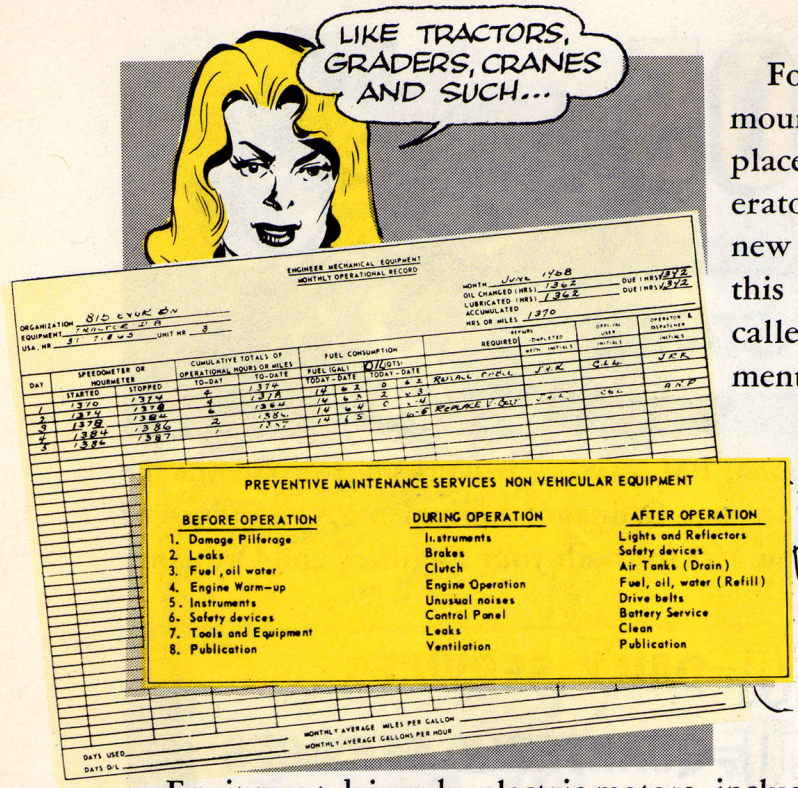


No more weekly, bi-weekly, monthly or bi-monthly services. Forget them. The whole idea is to get away from overmaintaining your equipment by cutting down the number of times you have to do a scheduled PM service. It also cuts down the wear and tear on the equipment and gives a guy more time for other maintenance duties.

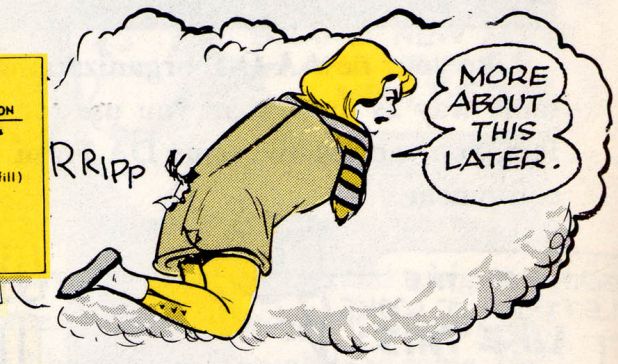


Same as always, pull your **A** service each time you operate the equipment or take over from another operator. This is an unscheduled maintenance service and includes your before-, and after-operation services.

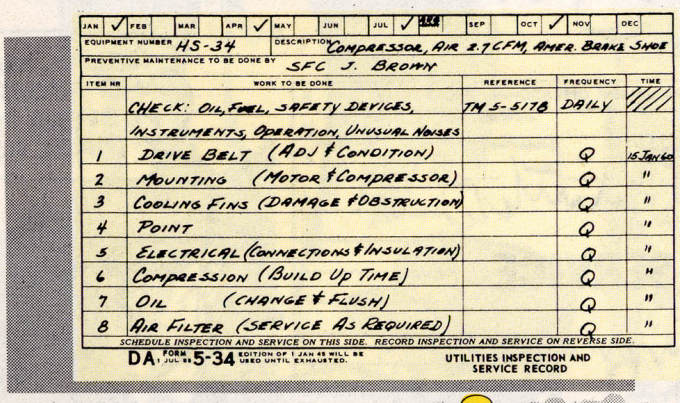
You follow the info in your pubs—TM's, LO's, TB's or multi-part manuals—for the services you're supposed to do. You use a DD Form 110 to record your **A** service on your self-propelled Engineer equipment—



For your engine-driven rigs—that are mounted or can't move themselves from place to place—like compressors, generators, rock crushers, etc., you use a new form that's much better suited to this type of Engineer equipment. It's called an Engineer Mechanical Equipment Monthly Operational Record.

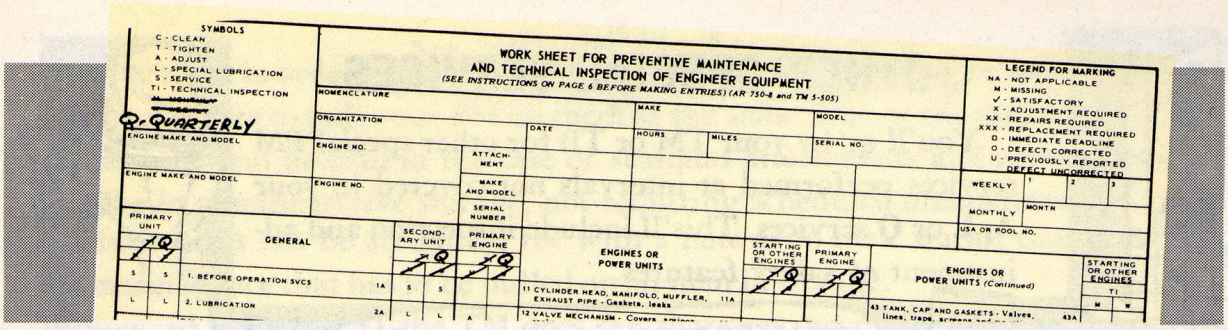


Equipment driven by electric motors, including Nike elevators, frequency converters, battery chargers, and such get a separate form. It's the Utilities Inspection and Service Record, DA Form 5-34. In addition, a locally produced Form, 464B, as outlined in PS Issue 82, is authorized for pulling inspections on Nike elevators. Remember: Form 464B is not an official DA Form. Its use was permitted for ARADCOM units pending formal approval of a suitable check form. Until then, DA Form 5-34 or the 464B may be used for those elevators.



Q SERVICE

The Q service is pulled every three calendar months or after 250 hours of operation—whichever comes first. It's done by your organizational maintenance people, with the operators standing by to lend a hand. The DA Form 460 is used to schedule the quarterly services and should be made out one full calendar quarter in advance. Your Q's include all those items that're listed in the weekly, monthly or bi-monthly columns in the TM or multi-part manuals for your equip-



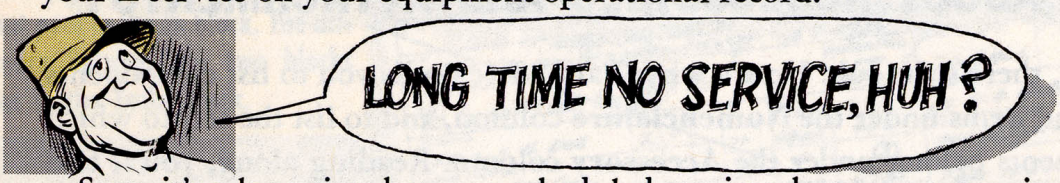
ment. But, you still use the 464 or 464B to record these services. And, incidentally, line out the bi-weekly and bi-monthly shown in the example in TM 5-505, and make it Q. Specialized rigs like your LOX plant and air conditioners will take their form as shown in their particular pubs.

You change the symbols and the hourly equivalents in the TM's and TB's that don't jive with the Q service when you pull PM or inspect your rig. You **don't** change your LO's—your lube intervals stay the same.

'Course, operating your equipment under rough conditions like extreme heat and cold, or dust and mud means you'll have to pull your Q services more often. Your CO has the green light to cut down the time between PM services.

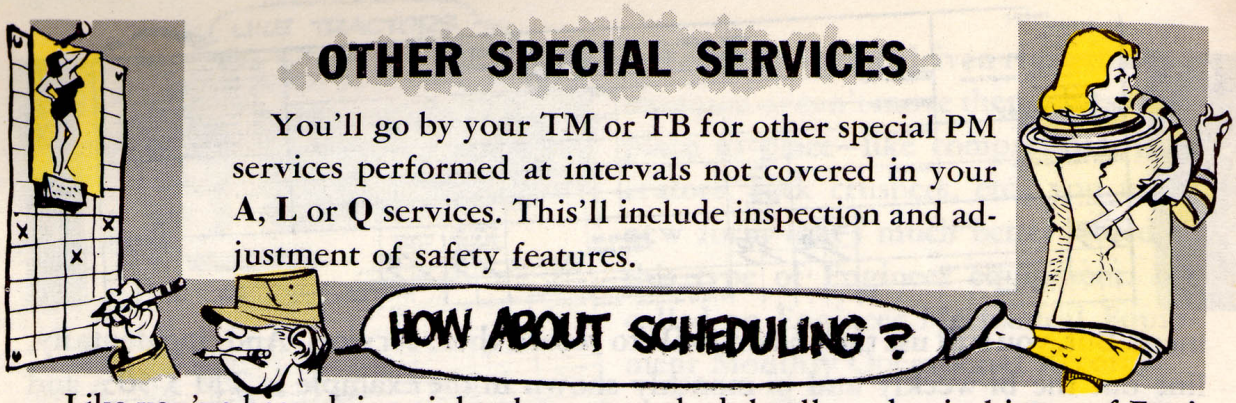
L SERVICE

You follow the LO for your equipment for all the lube services you don't usually do at your Q service. You record the major ones on your DA Form 460. You try to make the Q service and your major lube items come due at the same time. You'll be guided by the hours your machine has been in operation since the last service and the interval shown on your LO. Like your Q service, you record your L service on your equipment operational record.



Sure, it's a long time between scheduled services, but your supervisor or section chief'll make regular informal inspections to check your first echelon maintenance. This'll let him size up the unit maintenance first hand and clue him to the weak areas. If deficiencies crop up during these inspections, you or your crew will correct them right away. If you don't have the OK to do the job, then your unit mechanics or support people will take over from there.

This look-see isn't intended to be a formal inspection and your CO won't go by a specific check-list. It's just to clue him to the maintenance job that the operators and equipment section are doing. It also helps him keep tabs on deficiencies that need a special follow-up.



OTHER SPECIAL SERVICES

You'll go by your TM or TB for other special PM services performed at intervals not covered in your **A**, **L** or **Q** services. This'll include inspection and adjustment of safety features.

Like you've been doing right along you schedule all mechanical items of Engineer equipment over a 5-day week, Monday through Fridays, including holidays. If the service falls on a holiday, then you do it on the day before or after the holiday.

If your Engineer equipment reaches 250 hours before the scheduled date for a "Q" service, you pull the services at the earliest opportunity. If you pull them within five work days of a scheduled Quarterly, just ink the scheduled "Q". The "Q" services following stand as you scheduled them.

(Note: The TM says to circle the scheduled "Q" when you pull a Quarterly within five days of a scheduled one, and to make a note of this in the **Remarks** column. The reason you were to circle the "Q" was to show that the services were not pulled on the exact date scheduled. But the new 460 does not have a **Remarks** column so there is no real need to circle the "Q".)

If the services have to be pulled more than five days before a scheduled "Q", you go ahead and pull the services, then ink a "Q" on the form for the day you pulled them. You erase the next Quarterly date and re-schedule from the date you pulled the services.

WHAT ABOUT ACCESSORIES AND ATTACHMENTS?

Ah, now, there's the rub. Here's why. Para 23 (c) tells you to list components of sets as end items under the **Nomenclature** column, and to list the sets to which the components belong under the **Accessory** column. Reading along, you'll find that para 3 (d) tells you to list trailed equipment, attachments, etc., in the **Accessory** column. This works out OK for the old DA Form 460. But, here's where they toss you a curve. The new DA Form 460 (1 Aug 58) doesn't have an **Accessory** column. So, forget about the sets. List the major mechanical components in the nomenclature column as end items. As far as attachments are concerned, you

NO. a	NAME AND GRADE: OPERATOR b	NAME AND GRADE: LEADER c	EQUIPMENT NOMENCLATURE d	NEXT LUBRICATION MILEAGE OR DATE OR HOURS e	UNIT SERIAL NO. f	NEXT PM SERVICE MILEAGE OR DATE OR HOURS g	EQUIPMENT REG. NUMBER h
1	PFC SMITH	M SGT BLUE	GEN. SET, 3 KW, GED	250	B-15	250	S/N 35667
2	SP3 JONES	" "	BATTERY CHARGER	400	B-3	500	S/N 3854
3	SP3 CLAY	" "	TRACTOR, D-7	1350	B-19	1350	S/N 4T-5839
4	PFC BROWN	" "	GRADER, MTZ, CAT 12	675	B-24	675	S/N 9K 1439
5	PFC OWEN	SFC MATTHEW	SHOVEL, CRAWLER, 3/4 YD	1100	B-30	1250	9114128
6	PFC DOE	" "	SHOVEL, FRONT, 3/4 YD	10 FEB 60		10 FEB 60	S/N 256
			[illegible] 210 CFM	750	B-8	750	206X1199
							4B3679

may list them in order right below the end item with which they're used. This way you can be sure to pull your PM on them at the same time as the major item. This can also be real helpful in the case of seasonal attachments and accessories that may be in administrative storage, not requiring scheduled maintenance.

These items can be accounted for with a note as to their status, thus reducing the maintenance that has to be pulled on an item in storage.

Now, in para 23 (g) the TM does say that you can divide column g so as to list both the hours of the last PM service and the hours or date of the last oil change. But, again, if you do divide the column, you've made it hard to use the same scheduling form for Ordnance equipment. Keeping track of oil changes is no longer a big problem since the operational log maintained on each piece of equipment has spaces for this info. So whether you change the column will depend on your particular situation and your local SOP. The whole idea here is to maintain equipment . . . not forms.

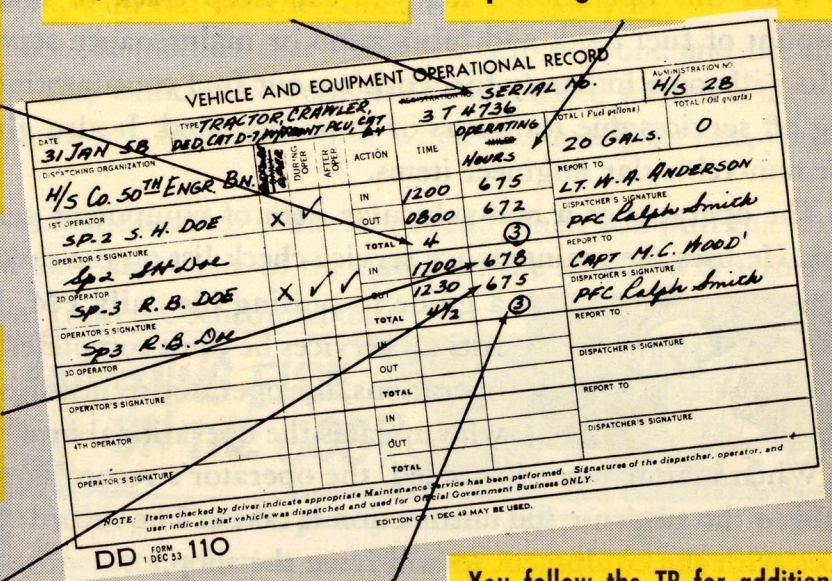
TRIP TICKET

Ok, same as always, your DD Form 110's your authority to operate your rig. Remember, you use it just for equipment that's self-propelled. Your trip ticket also gives you a rundown on your Daily A services. And, you check 'em off as you do your before-, during-, and after-operation services.

Under the **Time** column, put the hour that your rig was dispatched in the **Out** block and the hour that you reported back to the equipment pool in the **In** block. The difference between the two blocks goes in the **Total** block.

Change Block 3 (Registration, No.) to read: **Serial No.**

Change the **Miles** heading to read: **Operating Miles or Hours.**


VEHICLE AND EQUIPMENT OPERATIONAL RECORD

DATE 31 JAN 58	TYPE TRACTOR, CRAWLER, DED, CAT D-7, W/FRONT PCU, CAT 4			SERIAL NO. 3 T 4736			ADMINISTRATION NO. H/S 28
DISPATCHING ORGANIZATION H/S Co. 50TH ENGR. BN.		DURING OPER	AFTER OPER	ACTION	TIME	OPERATING HOURS	TOTAL (Fuel gallons) 20 GALS. / TOTAL (Oil quarts) 0
1ST OPERATOR SP-2 S. H. DOE	X	✓		IN	1200	675	REPORT TO LT. W. A. ANDERSON
OPERATOR'S SIGNATURE Sp2 SH Doe				OUT	0800	672	DISPATCHER'S SIGNATURE PFC Ralph Smith
2D OPERATOR SP-3 R. B. DOE	X	✓	✓	TOTAL	4	3	REPORT TO CAPT M. C. WOOD'
OPERATOR'S SIGNATURE Sp3 R. B. Doe				IN	1700	678	DISPATCHER'S SIGNATURE PFC Ralph Smith
3D OPERATOR				OUT	1230	675	REPORT TO
OPERATOR'S SIGNATURE				TOTAL	4½	3	DISPATCHER'S SIGNATURE
4TH OPERATOR				IN			REPORT TO
OPERATOR'S SIGNATURE				OUT			DISPATCHER'S SIGNATURE
				TOTAL			

NOTE: Items checked by driver indicate appropriate Maintenance Service has been performed. Signatures of the dispatcher, operator, and user indicate that vehicle was dispatched and used for Official Government Business ONLY.

EDITION OF 1 DEC 49 MAY BE USED.

DD FORM 1 DEC 53 110

When you finish your operation, the total number of hours on your rig at that time goes in the **In** block.

In the **Out** block under the **Miles** or **Hours** heading you write in the hours of operation that your equipment has accumulated to date.

The difference between your **In** and **Out** blocks gives you the actual number of hours that your equipment was in operation.

You follow the TB for additional items for inspection or servicing. You don't fill in columns e, f, g, or h (on reverse side of form) for Engineer equipment.

ABOUT THIS NEW MONTHLY OPERATIONAL RECORD

Man, this is as new as they come. You use this form for all fuel-consuming Engineer equipment—gasoline or diesel. It makes no never mind. If you've got an old coal-burner, it'll take an operational record, too.

ENGINEER MECHANICAL EQUIPMENT
MONTHLY OPERATIONAL RECORD

ORGANIZATION 815 ENGR BN
EQUIPMENT TRACTOR D-8
USA, NR 37 71865 UNIT NR 3
MONTH JUNE 1968
OIL CHANGED (HRS) 1362 DUE (HRS) 1372
LUBRICATED (HRS) 1362 DUE (HRS) 1372
ACCUMULATED HRS OR MILES 1370

DAY	SPEEDOMETER OR HOURMETER STARTED	SPEEDOMETER OR HOURMETER STOPPED	CUMULATIVE TOTALS OF OPERATIONAL HOURS OR MILES TO-DAY	CUMULATIVE TOTALS OF OPERATIONAL HOURS OR MILES TO-DATE	FUEL CONSUMPTION FUEL (GAL) TODAY-DATE	OIL (QTS) TODAY-DATE	REPAIRS REQUIRED	REPAIRS COMPLETED MECH. INITIALS	OFFICIAL USER INITIALS	OPERATOR & DISPATCHER INITIALS
1	1370	1374	4	1374	14 6-2	0 6-2				
2	1374	1378	4	1378	14 6-3	2 6-3	REPLACE FUEL FILL	J.N.R.	C.E.L.	J.R.K.
3	1378	1384	6	1384	14 6-4	0 6-4				
4	1384	1386	2	1386	14 6-5	0 6-5	REPLACE V-BELT	J.N.L.	C.E.L.	A.N.P.
5	1386	1387	1	1387						

You still need the DD 110, "Vehicle Equipment and Operational Record," when you operate all self-propelled vehicles like your tractors, graders, motor boats, and cranes. But, you don't use it for equipment like your stationary air compressors, rock crushers, or mounted rigs. Your monthly operational record is your operational authority for them.

You maintain one copy of this form in the dispatch office for all Engineer equipment that you have. You make out duplicate monthly operational records for all non-vehicular mechanical equipment items that don't need a DD Form 110. You use one form for your operational authority and the other for the record.

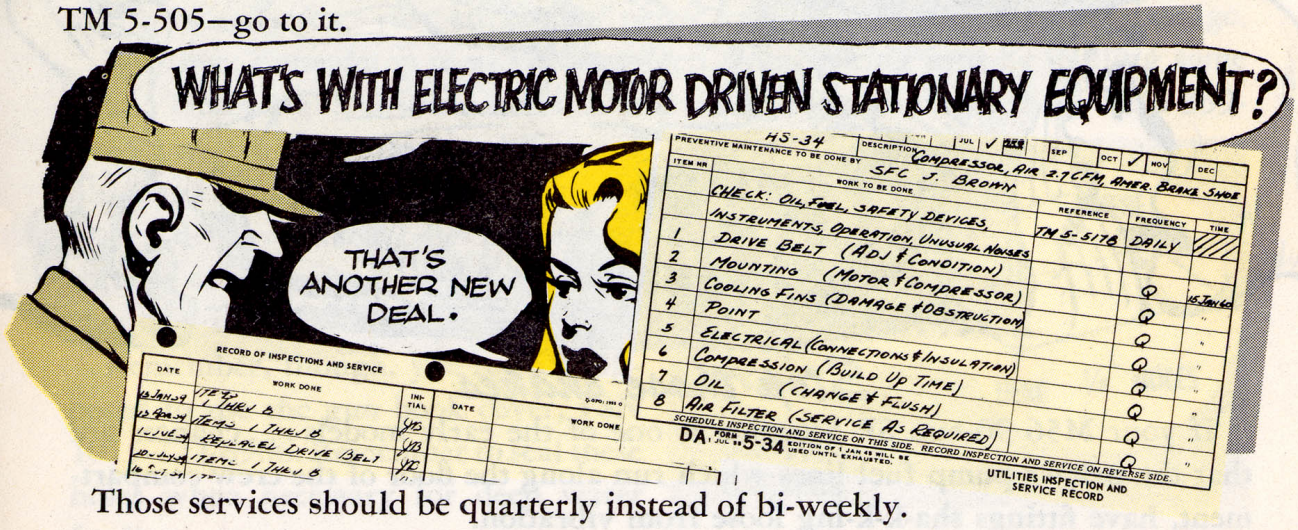
With this operational log you can keep track of hours or miles operated, amount of fuel used, and lubrication or maintenance services and repairs. This info will come in handy for working out fuel consumption rates, and for checking off services due for hours or miles operated. It also gives you a suspense file for non-vehicular Engineer items.

The operator of a non-vehicular item of equipment gets one copy of the record. He uses the maintenance service check list on the reverse side of the form as a guide in pulling his daily PM. He checks 'em off and lists all services he can't complete. At the end of the day's operations, the operator returns his copy to the dispatcher who updates the operational info on the retained record.

When maintenance is needed, the operator's record is held in the suspense file until action is taken. The record goes with the equipment to and from the shop.

You make out new operational records before the first day of the operating month. You transfer all deferred or pending maintenance, service info and accumulated hours or mileage to the new records.

Your "Engineer Mechanical Equipment Monthly Operation Record" it's long-winded title—is an optional type form. This means your outfit makes it up to suit your own needs. So, if you want to add a column or two to the form shown in TM 5-505—go to it.



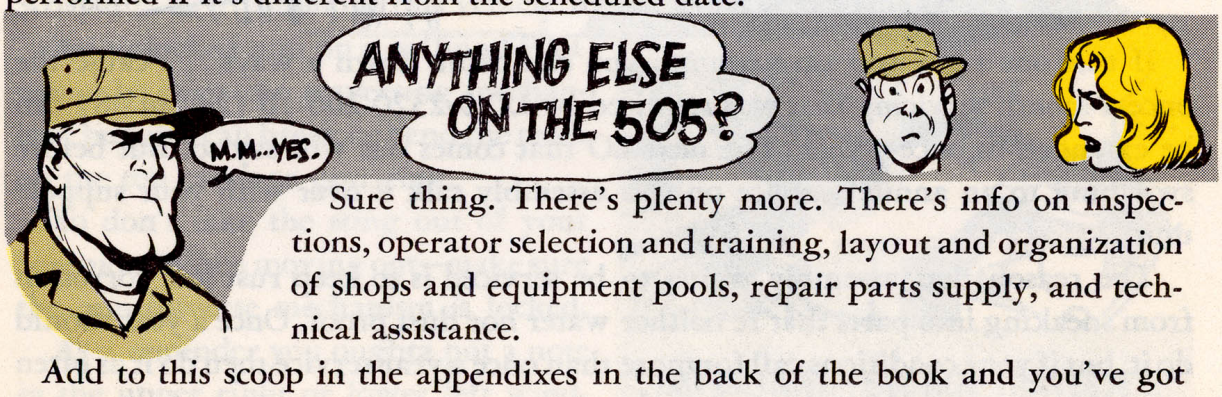
Those services should be quarterly instead of bi-weekly.

You use DA Form 5-34, "Utilities Inspection and Service Record," to schedule and record services on all electric motor-driven equipment like your frequency converters, Nike elevators, shop air compressors and battery chargers. Remember, 464B may also be used for Nike elevators.

You figure out the maintenance the equipment should get by using the manufacturers' instructions or technical pubs. If pubs aren't available, you go by the requirements for a similar item. You schedule your PM quarterly—unless it conflicts with the manufacturers' instructions. The completed PM goes in the service record portion of the form. You can use the same form for one year.

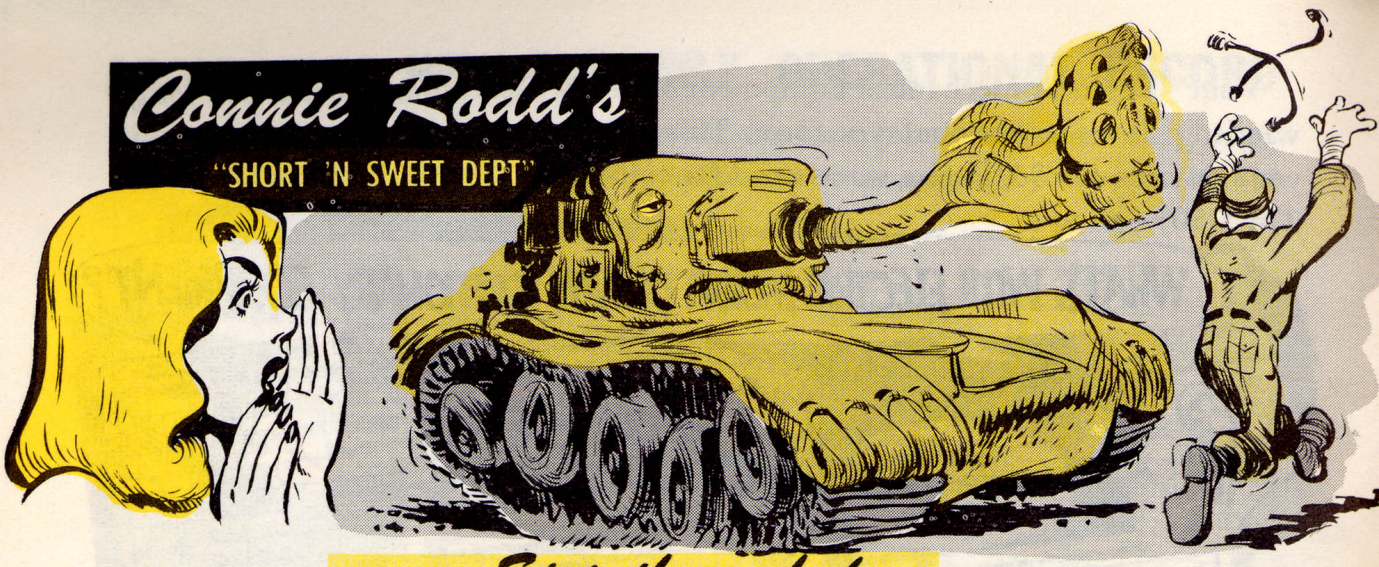
In scheduling, you check the months that the work is to be done and list the day in the time column. The work to be done in any one listed service is a continuation of the previous service. In other words, when you do a Q service, you'll also do a daily service.

You enter the dates that the service is due in pencil. When you pull the PM, you erase the scheduled date and write in the date that the service was actually performed if it's different from the scheduled date.



Sure thing. There's plenty more. There's info on inspections, operator selection and training, layout and organization of shops and equipment pools, repair parts supply, and technical assistance.

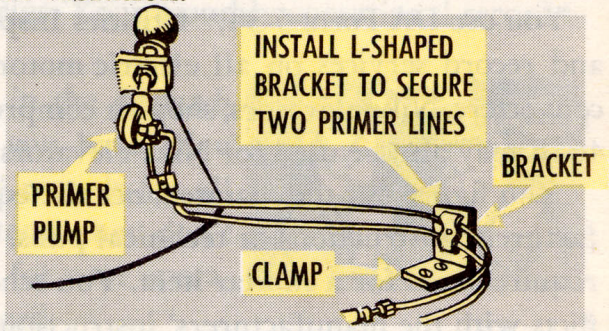
Add to this scoop in the appendixes in the back of the book and you've got yourself a real bonus.



Stop those shakes

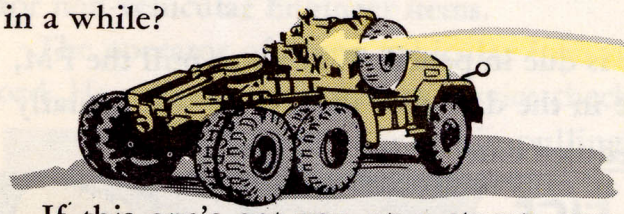
If your M56 90-mm SP Scorpion is one of the early models . . . chances are that the primer pump fuel lines which run along the floor of the crew compartment, have fittings sha-k-k-ing loose from vibration.

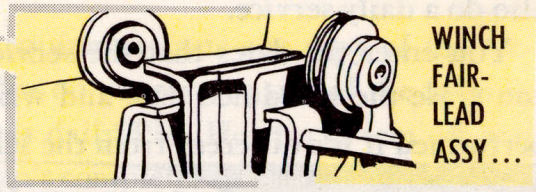
An L-shaped bracket, with a small clamp, will keep the two primer lines secure. The location best for the bracket is on the hull floor at the center of the primer lines. When you secure the bracket, use self-tapping screws at least ¼ inch in diameter.



Winch watch

Been wondering why you need to clean and pack your winch fairlead assembly on the M123 10-ton dual-winch truck-tractor monthly when it only gets used once in a while?





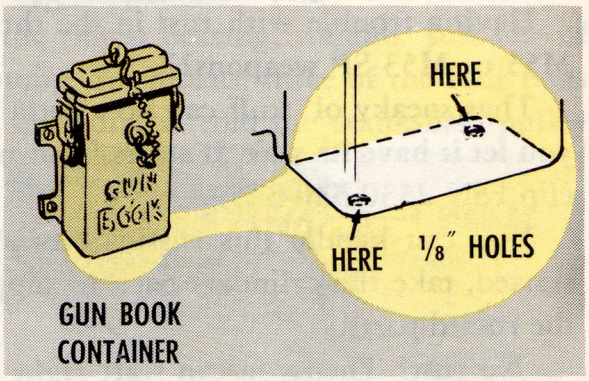
If this one's got you up a stump, you can climb down a ways . . . 'cause the once-a-month servicing that was required by LO 9-2320-206-10 (24 Jul 58) can be extended to once-a-year. The next LO that comes out will say so. But before switching to an annual service on this assembly talk it over with your support unit.

The reason that assembly wants to be serviced is to keep rust and corrosion from sneaking into parts that're neither water nor dust proof. Once a year should do it, but if your conditions call for more than once a year service then do it as often as needed . . . even if it's once a month.

Protect your gun book

Damp weather can cause damage to a lot of your equipment. The dampness sneaks in and causes rust, sticking of parts, fogged up lenses, and other damage.

But there's one damp mess you can keep from getting into by drilling some holes. That's right, drilling holes in your Gun Book container, FSN 1025-339-2109, will keep condensation from forming.

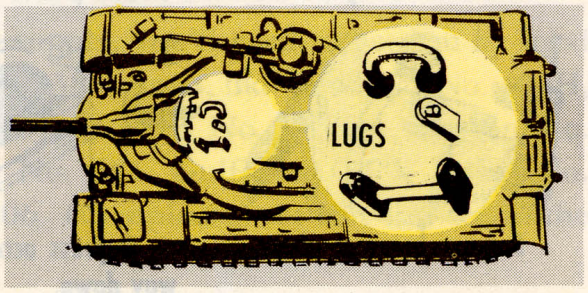


Just drill two ⅛-in holes in opposite corners of the bottom of the container about ½ inch from each end.

Remember, though, you're still supposed to use the gun book cover, FSN 1015-722-8906. Remember to seal these holes when necessary for deep water fording.

Mysterious mount

Does that arrangement of lugs welded on the top forward turret area of the M48 medium tank and on the left center of the M103 heavy tank's turret have you stumped? Well, it's not as mysterious as it seems—it's just something that's not used very much.



These items are stowage lugs which are used to carry the .50-cal machine gun mount when the tank has to be shipped by railroad. The full info on how it works was on page 503 of TM 9-7014 (Dec 54), the old pub for the M103 heavy tank.

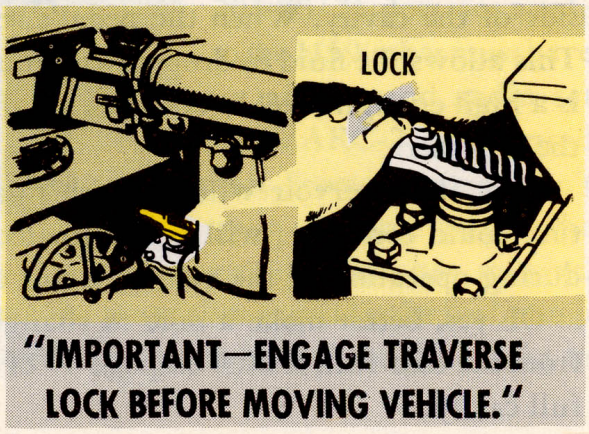
Lock before moving

Plenty damage can be done to the traversing mechanism on your M56 90-mm Scorpion . . . if you move this vehicle **without** locking the gun-traverse lock.

An unlocked gun on a rolling SPAT not only ruins the traversing mechanism, but also can break or bend the teeth on the top carriage gear-ring.

So don't take the sting out of your Scorpion. When moving out—make sure the gun-traverse mechanism is locked.

As a reminder you oughta put a note in the upper right or lower left windshield frame corners saying:



Slave cylinder...filling

Having trouble with rust in the throttle slave cylinders of your M52, M44, M55 or M53 SP weapons??

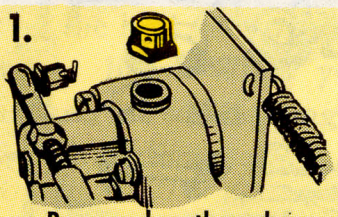
That sneaky ol' stuff can do a lotta damage to the innards of the cylinder if you let it have its way. It starts from moisture, which gets in thru the breather clip FSN 2530-530-3259.

You can handle this rustin' business one of two ways. If trouble's already started, take the cylinders back to support. They'll take 'em apart and clean up the rusted parts.

No rust? Then you can start right out at once to keep 'em in good working order. A well lubricated cylinder will protect your piston from sticking and prevent scuffing of rubber cups.

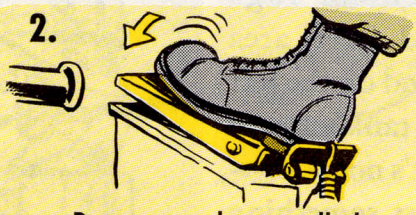
The best way to be sure those parts are taken care of is to:

1.



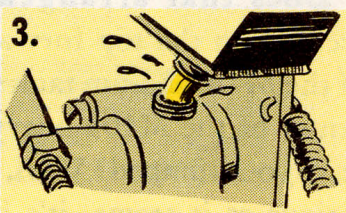
Remove breather plug.

2.



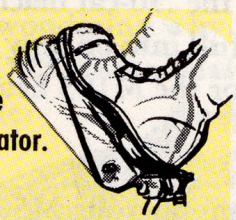
Depress accelerator all the way down.

3.



With pedal at full stroke, fill cavity full of brake fluid.

4.



Release accelerator.

5. Now, if you wanta make sure the cavity is full, gently stroke the pedal a coupla times. This fluid should show each time the pedal's depressed.

6.

Replace plug.

When the accelerator's depressed, the piston gets pushed out, into the breather side of the cavity. When the pedal's released, the piston returns to the cylinder. This allows the fluid to drop down around the half-full mark in the cavity, which is a high enough level to take care of the trunnions and other working parts of the cylinder.

Now the reservoir will fill with fluid and most of the air space where moisture could condense, will be eliminated. The small air space, which'll be there during operation of the vehicle won't cause trouble.

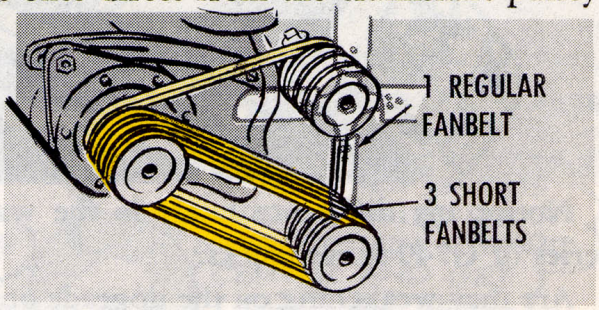
Oh yes, better make a note to change the cylinder filling instructions to **full** from the half-full, shown on page 47 of PS 54. The intent was to arrive at a half-full cavity.

Pump preserver

Been getting a clatter outa the water pump on that Jeep you're driving with the 100-amp charging system?

Those four belts have to be adjusted tighter'n an undersize bikini to get enough output from that generator. So . . . after a while the water pump bearing grows weary a-totin' the heavy load and starts to wobble.

There's a way to lighten the load on the pump bearing, though. Just one of those belts is enough to run the water pump. So, replace three of the four belts with shorter models. Connect the short ones direct from the crankshaft pulley to the generator pulley—bypassing the run around the water pump. Then adjust like it says in para 10b(9) of both 100-amp system MWO's — MWO Ord G740-W11 (1 Nov 56) for the M38 and MWO Ord G758-W6 (14 Nov 56) for the M38A1.



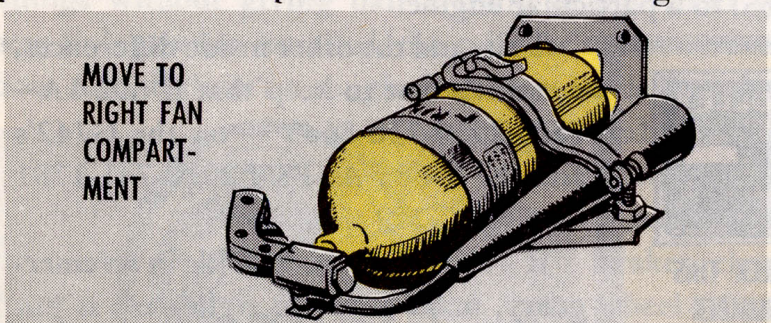
With this hookup you cut down on the drag on the water pump bearing and give it a new lease on life.

Until short belts become available in supply, you'll need to get 'em by local purchase. The ones you need are 37⅛″x⅜″x38 degrees, like Goodyear No. 404H, Goodrich No. 27W, Firestone No. 3-J-164, Atwood No. V-5034, Dayton No. V-270, Cities Service No. W-99, Atlas No. 681, Gulf No. G-99, Mobil No. 155, and Gates Vulco HC-series No. 8206. (Complete short-belt sets are in the mill for the G758's and G740's.)

Work notice

There are two bits of info you M59 and M84 self-propelled mortar crewmen might want to find out more about.

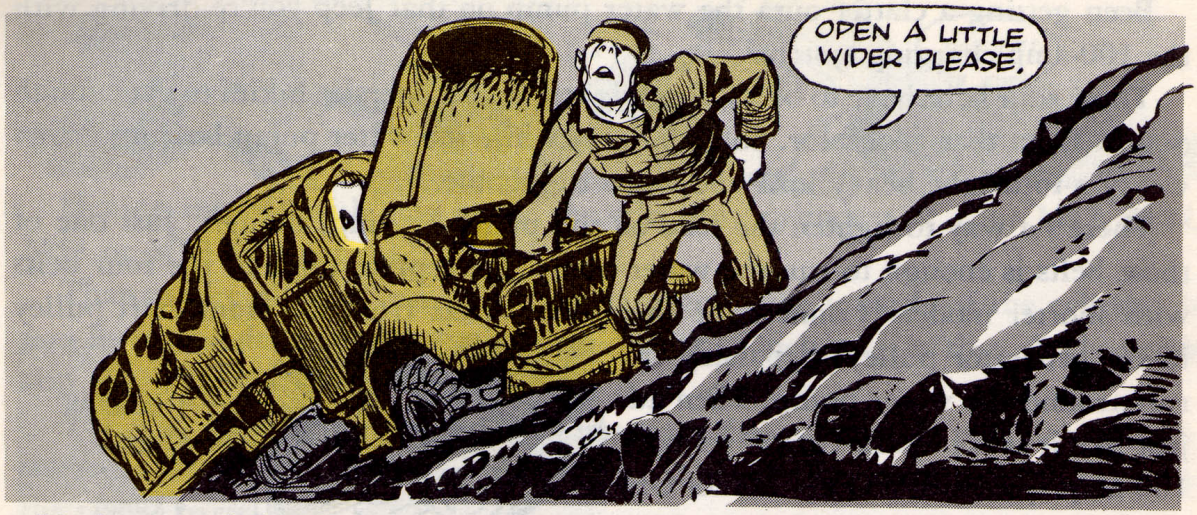
MWO 9-2300-203-20/2 (23 Apr 59) tells about relocating the portable fire extinguisher from the floor directly behind the driver's seat to the right fan compartment forward panel on the M59. It's **urgent.**



This MWO (9-2300-203-20/2) does not apply to the M59's that must have an air-ground radio set (AN/ARC-27) mounted in it. Seems they both can't go in the same spot, so the extinguisher has to give.

TB 9-2300-203-12/1 (15 Apr 59) gives the poop about sealing the fuel pump capacitor assembly with a sealing compound to stop corrosion and fuel leaks in the crew compartment.

By the numbers



Notice any difference lately in the way the engines perform in your G742-series or G749-series trucks?

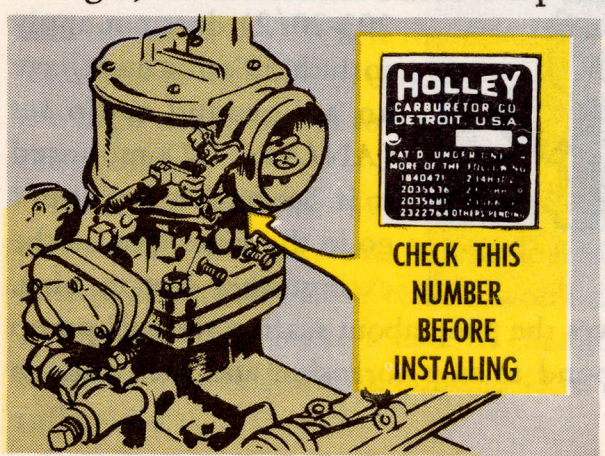
Are they weakening on the upgrade or under load? Or doing any off-beat gyrations? Might save yourself some grief by lifting up the hood and feeling for the carburetor numbers that're on the name plate or cast in the body.

Y'see, the carburetors for the G742's and G749's look as much alike as twins. There's a switch from left to right in the hand choke hook-up on some of the G749 fuel mixers. Otherwise, the only way to tell which you're getting is by the numbers.

R-602-1A is your carburetor number for the G742's . . . unless you've got early models with the R-742-A or the R-602-A. And R-683-A goes with your G749's. But since all those carburetors look alike on the outside, somebody may have handed you one from the wrong bin.

So, why get excited if they got switched? It's because, on the inside out of sight, there're scads of differences in sizes of valves, venturi and nozzles.

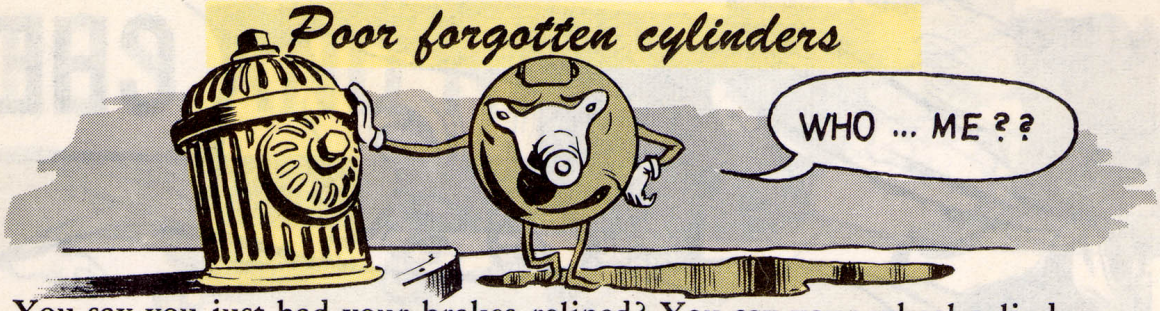
Take, for instance, the valve that opens to add more gas to the fuel mixture when intake manifold vacuum drops. So that it'll cut in at the right time with extra gas, it's made to be mated to a particular engine.



This, and the other inside differences, mean it's best to keep that R-602-1A—FSN 2910-736-8643 — on the G742's and the R-683-A—FSN 2910-741-1781—on the G749's.

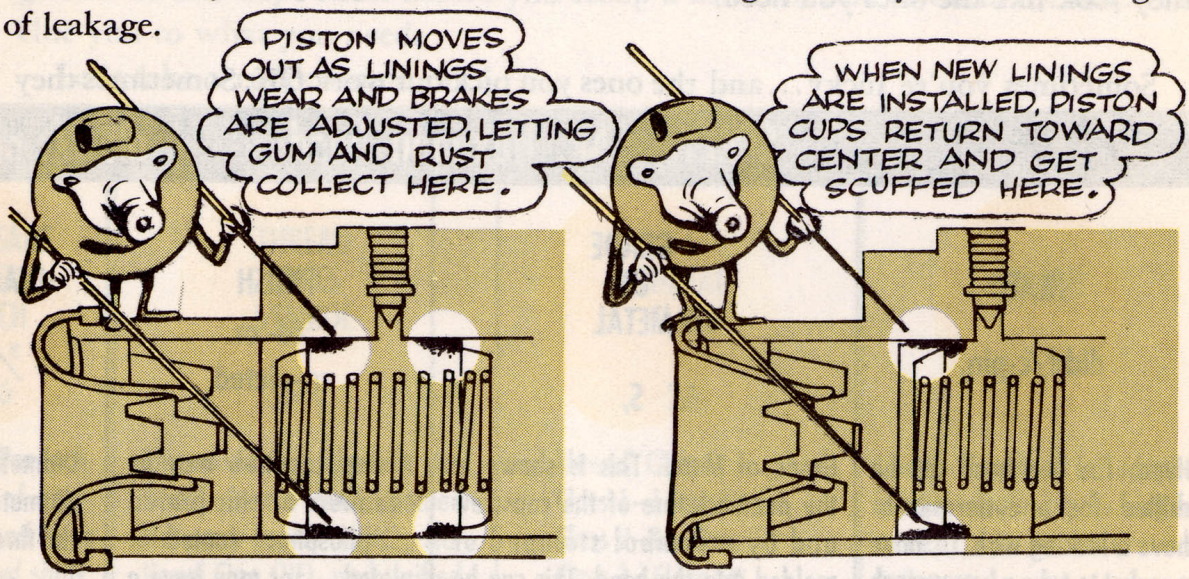
If a switch has been made in an emergency, make sure the right carb is put back on your engine as soon as you can get one. And to avoid any mix-up, check the number before installing it.

Poor forgotten cylinders



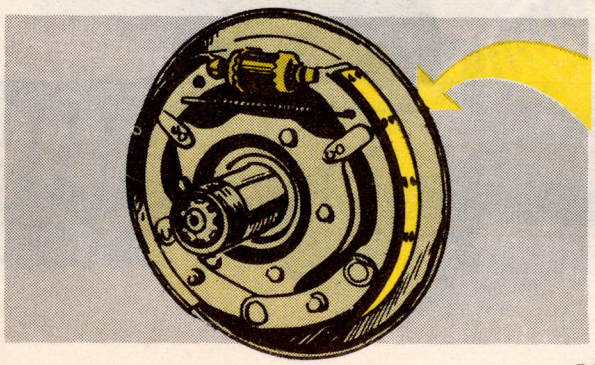
You say you just had your brakes relined? You say your wheel cylinders are leaking like a pup on a cold day? You say you're going giddy trying to figure out why? Take heart, brother—there's a simple reason for your woes.

Whenever you reline hydraulic brakes you should always check the condition of the wheel cylinders to see if the boots are damaged or if cylinders show signs of leakage.



You know those old, worn-down brake linings you just threw away? Well, while they were wearing, you were adjusting—and this adjusting relocated the cylinder piston travel more and more to the outer half of the cylinder.

This may have left that inside section of the cylinder's bore set for gum-up, rust and pitting because of lack of use. So, what happens when you install new linings without giving half a mind to the wheel cylinders? Simple—when the new linings were installed, the cylinder's piston travel returns to its original position. And, if there's a roughed-up area inside the wheel cylinder, the piston cup's sealing surfaces get a good scuffing. Result—leaks!



So, play it safe. When you reline brakes, check for conditions inside the wheel cylinder for gum-up, rust and pitting. If you find this kinda trouble, correct it by cleaning, honing, or cylinder replacement as necessary.

You don't wanta play blind-man's-buff when you're working with small hardware items like capscrews, nuts and bolts, and stuff like that. It's easy for you to reach into a box and figure that the screws you pick out oughta work because they look like the ones you need.

Sometimes you're lucky... and the ones you pick out work OK. Sometimes they

SCREW, CAP, Hexagon head: dld-f/c-pin, S,

HEAD
dld f/c-pin,

Head: The hex head can be drilled for a cotter-pin or have a locking wire . . . have a socket to take a hex-wrench . . . or have no special features at all. (Any hex-head screw #10 (.190 in. diameter) and smaller, or any hex-head screw #10 and larger with a slot in the head, you call a machine screw, not a capscrew.)

GRADE OF METAL
S,

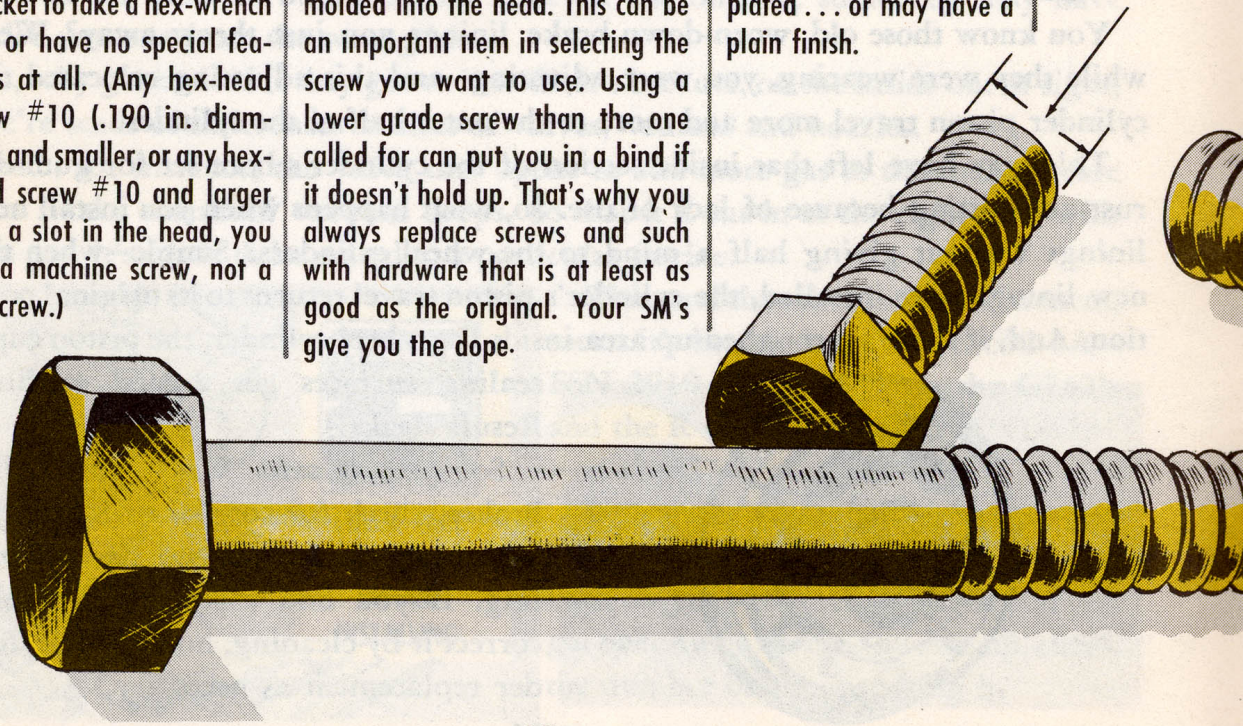
Grade of Metal: This is shown in the nomenclature of the capscrew and by a symbol stamped or molded into the head. This can be an important item in selecting the screw you want to use. Using a lower grade screw than the one called for can put you in a bind if it doesn't hold up. That's why you always replace screws and such with hardware that is at least as good as the original. Your SM's give you the dope.

FINISH
cd- or zn-plated

A steel capscrew may be cadmium or zinc plated . . . phosphate coated or plated . . . or may have a plain finish.

DIAMETER
$\frac{3}{8}$-in

Diameter: Outer diameter of the threads.



CHECK SPECS AND HEX

You don't wanta play blind-man's-buff when you're working with small hardware items like capscrews, nuts and bolts, and stuff like that. It's easy for you to reach into a box and figure that the screws you pick out oughta work because they look like the ones you need.

Sometimes you're lucky... and the ones you pick out work OK. Sometimes they don't... with the result that something falls apart or gives way, causing much anguish all around.

There's more to mating screws than just matching size or threads. Take a gander at this dope sheet before you scoop a fistful of screws outta the box. It'll clue you to what you need.

Let's take a rundown on one.

SCREW, CAP, Hexagon head: dld-f/c-pin, S, cd- or zn-pltd, 3/8-16UNC-2Ax1

HEAD — dld f/c-pin,

Head: The hex head can be drilled for a cotter-pin or have a locking wire . . . have a socket to take a hex-wrench . . . or have no special features at all. (Any hex-head screw #10 (.190 in. diameter) and smaller, or any hex-head screw #10 and larger with a slot in the head, you call a machine screw, not a capscrew.)

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FINISH — cd- or zn-plated

A steel capscrew may be cadmium or zinc plated . . . phosphate coated or plated . . . or may have a plain finish.

DIAMETER — 3/8-in

Diameter: Outer diameter of the threads.

THREADS PER INCH — 16

Threads Per Inch: Number of complete thread turns per inch of shaft.

THREAD SERIES SYMBOL — UNC

Thread Series Symbol: National Coarse (NC), Unified National Coarse (UNC), National Fine (NF), and Unified National Fine (UNF).

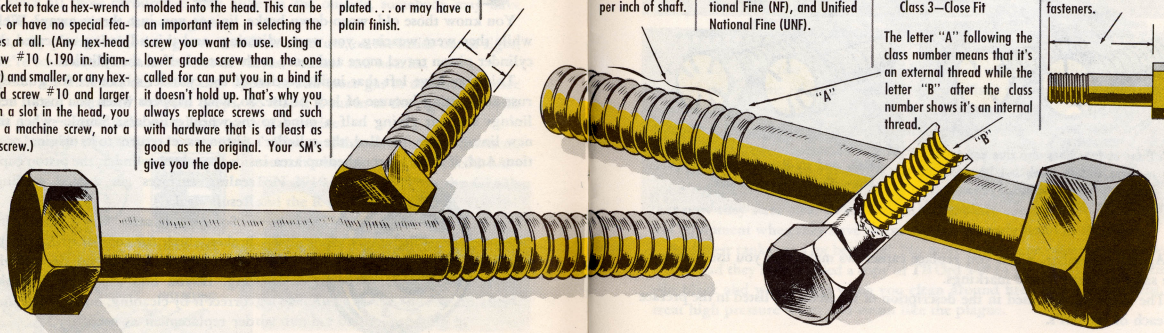
THREAD CLASS — 2A

Thread Class:
Class 1—Loose Fit
Class 2—Medium Fit
Class 3—Close Fit

The letter "A" following the class number means that it's an external thread while the letter "B" after the class number shows it's an internal thread.

LENGTH — x 1-in,

Length: You don't include the head in measuring the length, except for countersunk fasteners.



SPECS AND HEX

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cd- or zn-pltd, 3/8-16UNC-2Ax1

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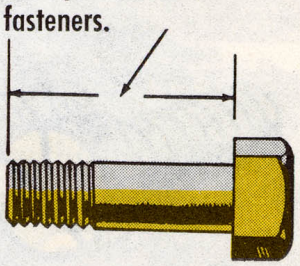
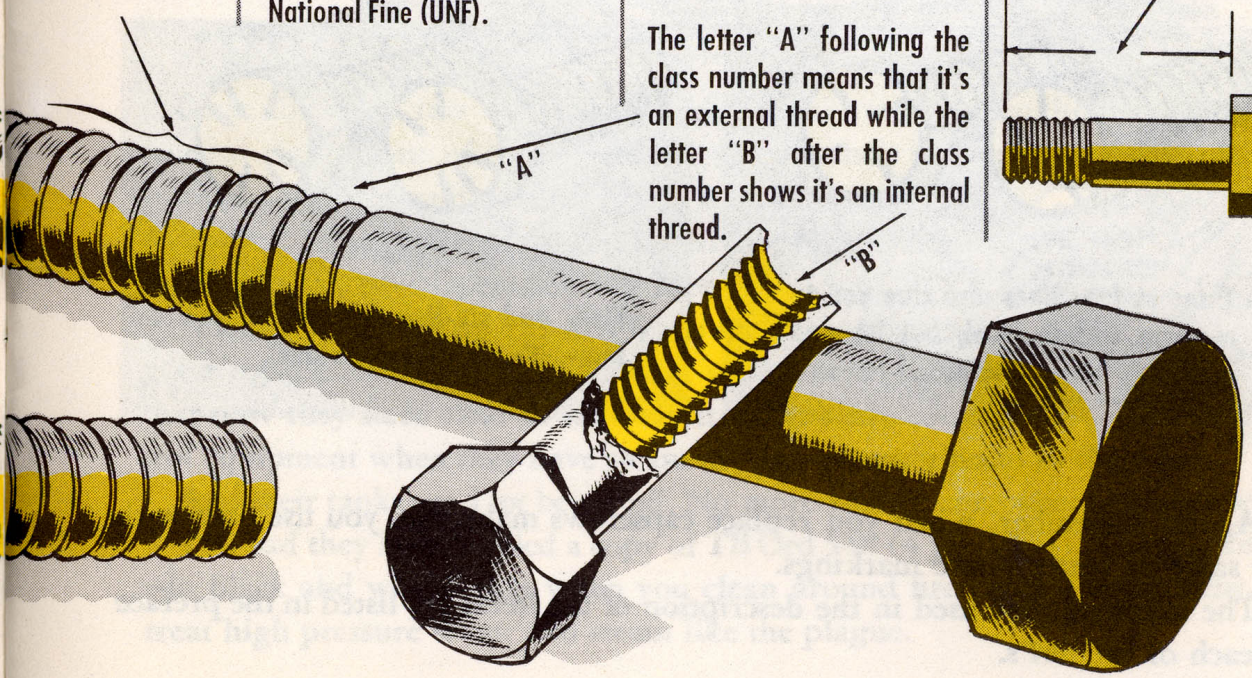




HERE ARE THE GRADES OF METAL FOUND IN AND AROUND THE ARMY SUPPLY SYSTEM:

S—This is the ordinary low carbon or commercial steel capscrew.

Corr-Res-S—Corrosion resistant steel.

Med-Car-S—Medium Carbor Steel.

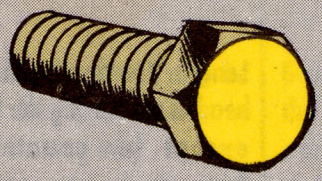
Alloy-S—The alloy grade is of better quality than the medium carbon.

Cr-Alloy-S—Your chrome alloy steel capscrew is of higher quality yet.

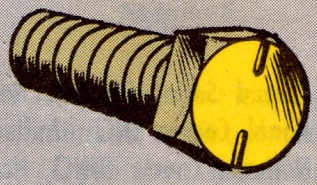
Bz—Bronze capscrews—mostly used for special purpose jobs, like on marine equipment and in salt-water areas.

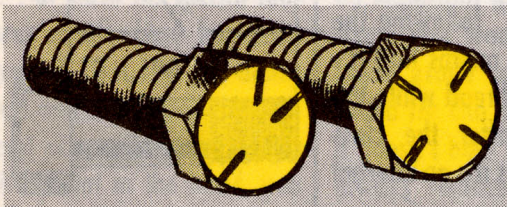
The head markings clue you to the grade of steel in your capscrews.

If there's no markings at all on the head, then you know it's low carbon or ordinary commercial steel.

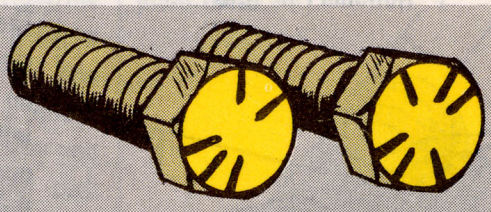


Two lines on the head, like this, tell you it's medium carbon steel.





Three or four lines also clue you to medium carbon steel, but let you know it's better quality.



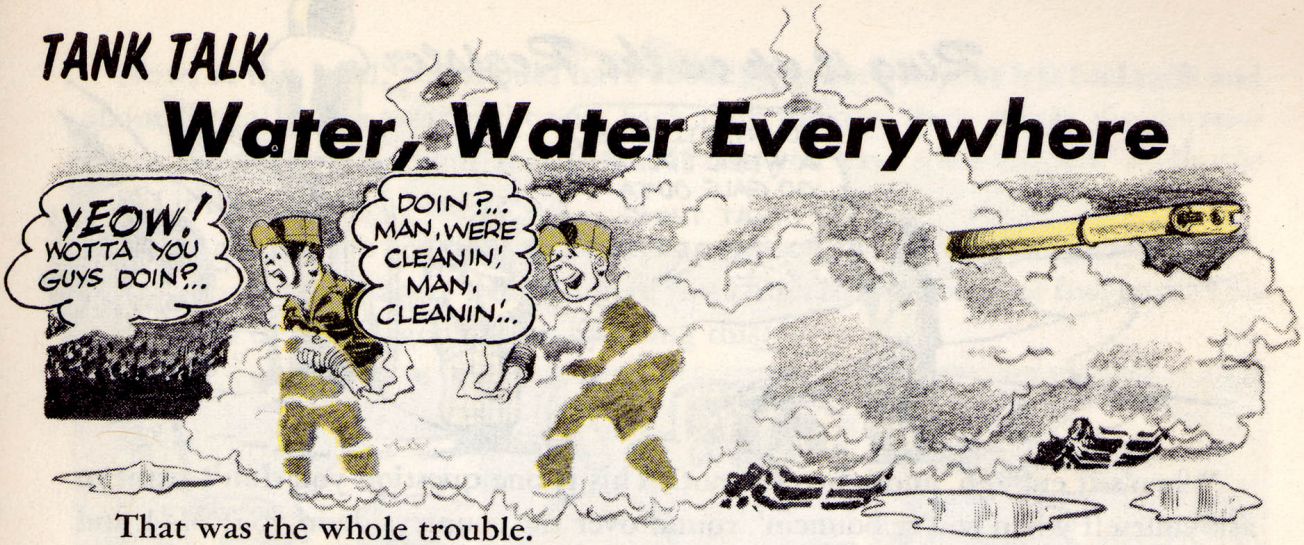
Five- and six-line symbols let you know it's an alloy-type steel.

Again. remember, when you replace capscrews make sure you use ones with the same or better grade markings.

The abbreviations used in the description of the items are listed in the preface of each of the SM's.

TANK TALK

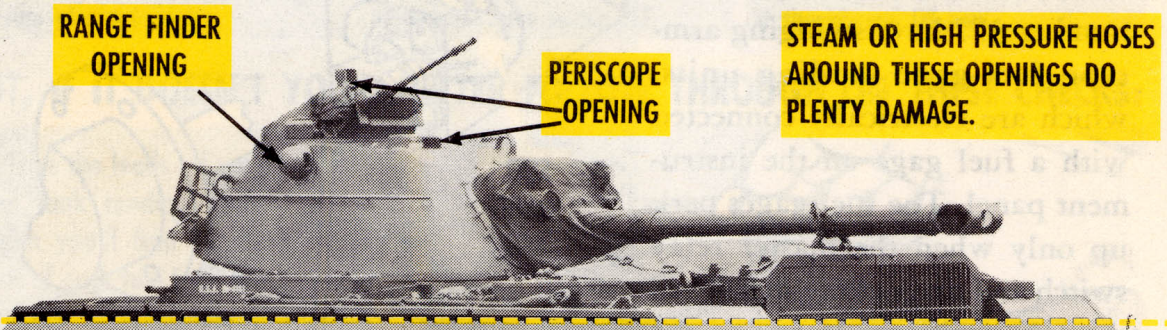
Water, Water Everywhere



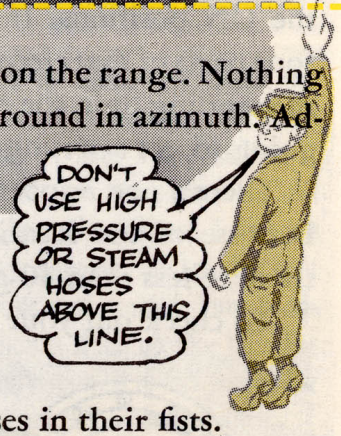
That was the whole trouble.

This tank outfit had some real eager beaver guys. Just let 'em get their hands on a high pressure hose or a steam hose when it came time to clean up their lumbering monsters. They'd open the hatches and blast away inside the turret with the hose.

And you'd better believe it—the turret would be spotless inside. Then the guys'd blast away with the hoses on the outside. And they'd hit around the openings for the range finder and periscope—it didn't make them no never mind.



Came the day a few weeks later and the tanks were out on the range. Nothing worked right. Some of the turrets had to fight their way around in azimuth. Adjustment knobs wouldn't turn. It was tough to crank the computer. Lenses were all fogged up. Radios failed. They renamed the day—"Operation Big Mess."



Nobody was wearing a crown when the eager beavers got a royal chewing. But you can bet your bottom buck that now they steer clear of tank electrical and fire control equipment when they have steam or high pressure hoses in their fists.

And their tanks are a lot better off. No more rust or corrosion or foggy lenses.

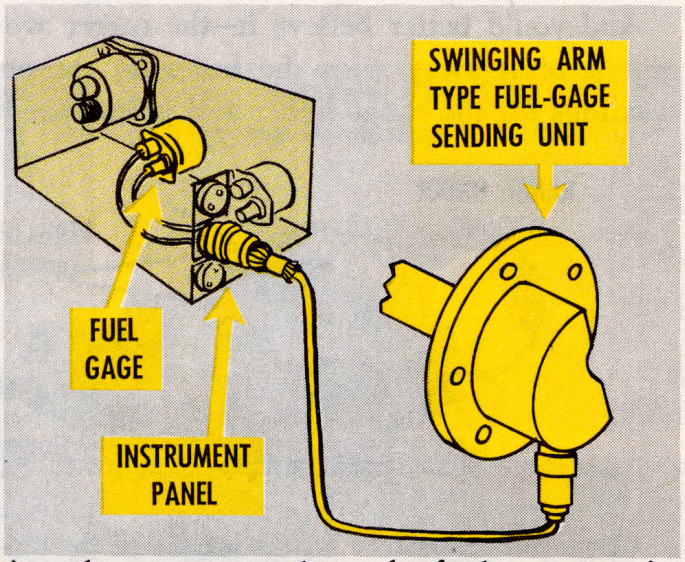
Too bad they hadn't spied a copy of TB Ord 548 (4 Jan 1954). They'da known—in black and white—that when you clean around fire control equipment, you treat high pressure water and steam like the plague.

Ring it up on the Register

When's it enough, and when's it not? This is one question you **don't** want to ask yourself when you're bouncin' 'round over the countryside in your M41 and M41A1 tanks, or your M42 and M42A1 Twin-40 motor carriages.

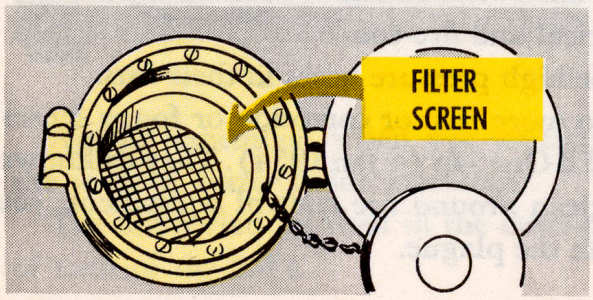
Before you pull out you'd better know if you have enough gasoline or if you don't—saves a lot of shoe leather later on. One way you can be sure is to make awfully positive the gasoline gages on those vehicles are A-Number-1 right.

Both fuel tanks on your M41 and M41A1 after manufacturer's serial number 2389 and on your M42 and M42A1 after serial number 377 have swinging arm-type fuel-gage sending units, which are electrically connected with a fuel gage on the instrument panel. The fuel gages perk up only when the master relay switch and magneto switch are in the ON positions. If one of the four parts of that circuit foul up—the sending unit, the electrical wiring, the power supply or the fuel gage—you're going to get a wrong reading.



There's one important thing to remember about these gages and sending units. Because of the location of the sending units, the gages may read EMPTY if there're less than 40 gallons of gas left in either of the tanks.

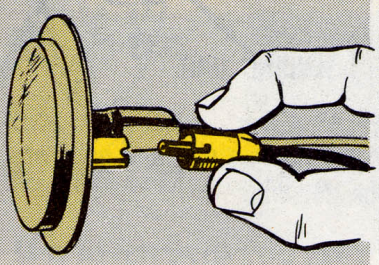
To check out your gage for rightness, here's what to do:



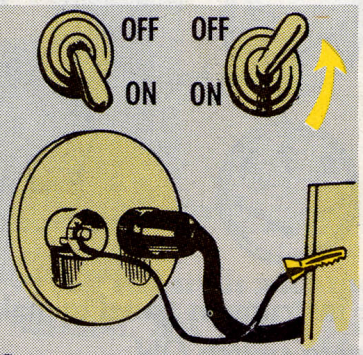
Look down into your fuel tank filler neck. The lowest point at which you're able to see the fuel is where the fuel is right on level with the bottom of the filter screen. After it gets lower than this, you can't see it any more. So, get your gas to this level.

Now, at this level, you should have about 57 gallons in your left fuel tank and about 60 gallons in your right one. Each tank filled to these points should read about the ¾ level on your fuel gages. If not, you have some checkin' to do. Go about it this way:

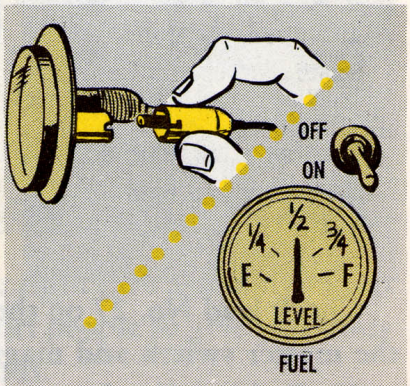
There are times when the fuel receiving unit on the instrument panel can develop a magnetic charge, which'll give you a high reading on your fuel gage. You can get rid of this magnetic kick by doing this:



1. Remove the Douglas electrical connector on lead No. 30 or 31, which is your lead to the sending unit from the fuel gage at the instrument panel.



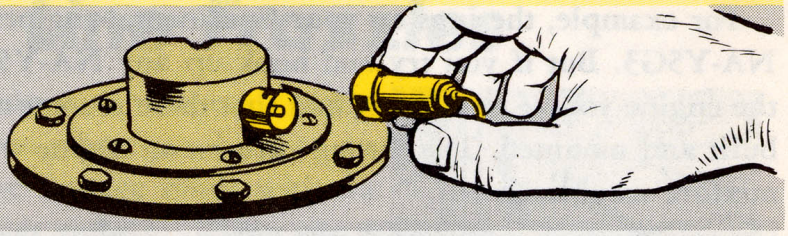
2. With your master relay switch and magneto switch in the ON position, take a piece of wire and short the gage pin to a ground point, like on the side of the hull. Then, turn the master relay switch OFF.

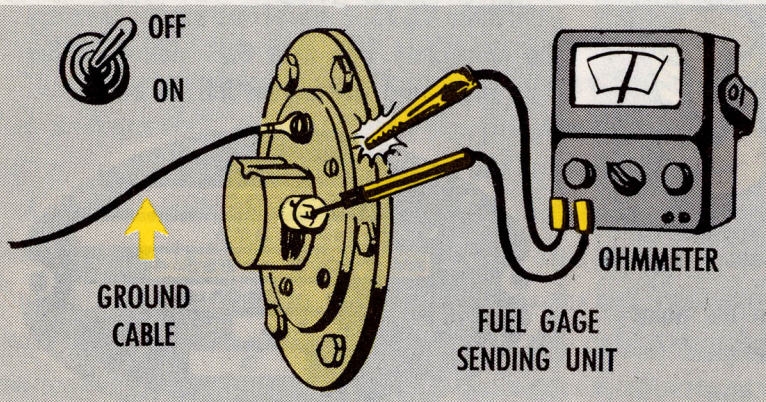


3. Hook up your lead No. 30 or 31 and turn the master relay switch ON. If the magnetic kick was making the fuel gage go loopey, then it should read OK now.

BUT, IF IT DOESN'T YOU'D BETTER FOLLOW THROUGH ON THESE CHECKS:

1. Take the leads off your fuel tank sending units, which you'll find on the rear of each fuel tank below the battery support.





2. With an ohmmeter, check the resistance of the sending unit. Make sure the master relay switch is turned off, or the ohmmeter will flip its lid and be ruined. Take your readings between the sending unit connector and ground. Your readings should stack up like this: For an empty tank, 0 to 0.5 Ohms: for a full tank, 29.6 to 31.3 Ohms.

If the unit still checks out NG, then the sending unit is NG, and you'd better get a new one.

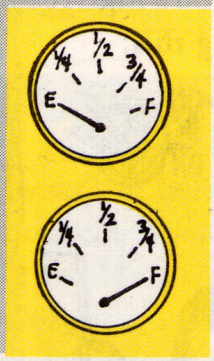
If the sending unit checks out OK, then reconnect your leads and go through the procedure for getting a magnetic charge out of her.

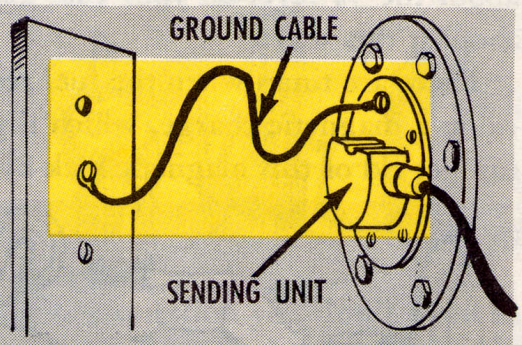
There's a couple of more checks to make on your lines if the gage is still fouling. Here they are:

1. Check the vehicle wiring for open or grounded leads between the gage and sending unit.

If lead 30 or 31 is grounded, the gage would read empty.

If either is opened, the gage would read FULL.





2. Make sure the sending unit and gage are grounded right.

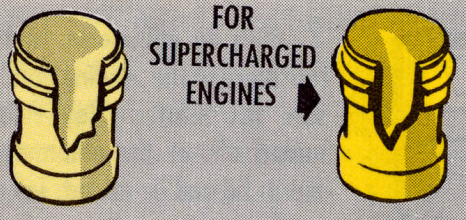
Check lead No. 27 on the instrument panel to make sure they're energized with the master switch and magneto switch ON.

If all this fails, then you'd better get yourself some new fuel gages pronto.

Carburetor Capers

Twins may look the same, but they have characters of their own. It's the same way with your tank carburetors.

For example, the jugs on your Continental engines all carry the model number NA-Y5G3. But if you try and hook up any NA-Y5G3 model carburetor with the engine you've got, you'll find that there're some differences in the way they're built and mounted. The wrong carb on an engine will let you in for a lot of fuel mixture troubles.

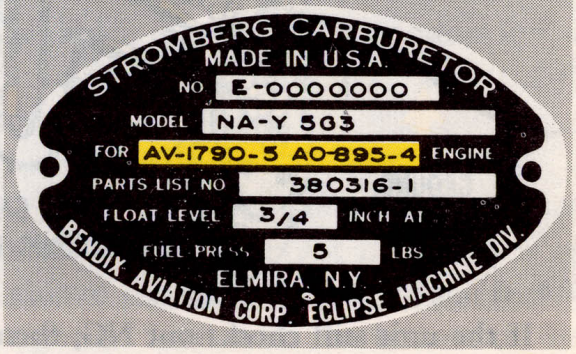


LIGHT CONSTRUCTION AD-895-4 AND AV-1790

HEAVY CONSTRUCTION AOS-895-3 ONLY

Basically, the trouble comes from the point that some of these jugs are designed for supercharged engines, while the others are built for the more usual stuff.

All these NA-Y5G3 model carb assemblies carry a nameplate with their own model number on them **and** the engine it'll go on . . .



The latest scoop is laid out in TB Ord 1015 (27 June 58) for identifying which carburetor goes on your AOS-895-3, AO-895-4 and AV-1790 series engines. This TB supersedes old TB Ord 588 (23 Dec 54).

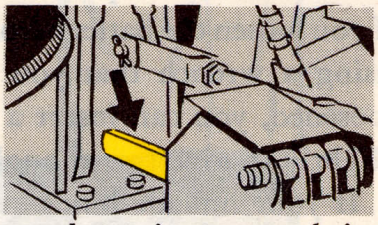
Here's the up-to-date stock numbers for those carburetors and how they line up with the various engines:

Carburetor FSN	Engine Serial Nos.	Remarks
2910-752-1189	AV-1790 series – 1 thru 4948 AO-895-4....1 thru 242	Mounted to air-intake elbows with 1/4-in studs
2910-740-3299	AV-1790 series....4949 thru 21780 AO-895-4....243 and after	Mounted to air-intake elbows with 5/16-in studs
2910-141-9830	AV-1790 series....21781 and after	Interchangeable with carb assy 2910-740-3299 for 1790
2910-734-6585	AOS-895-3....1 thru 1939	Takes 1/4-in studs for mounting
2910-741-6587	AOS-895-3....1940 and after	Takes 5/16-in studs for mounting

If it so happens you get the wrong size studs with the right carb assembly—keep the shop open, you're still in business. Ask your support people to give you studs to fit the holes—or have them drill holes to fit the studs.

One thing more...you might run across situations where the nameplate is missing or else the writing is rubbed out. So, like the TB tells you, check the inside diameters of the venturi tubes to be sure. You'll find a $1\frac{27}{32}$-in ID for the jugs that go with your AV-1790 series and AO-895-4 engines, while the AOS-895-3 engine carb has a $1\frac{1}{2}$-in tube ID.

Fuel Line Frazzles



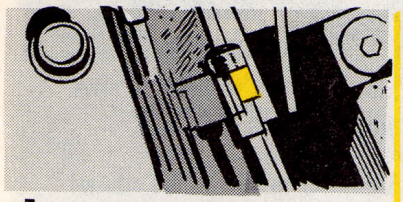
Lots of things can go wrong with your early model M48's and they'll still get you where you have to go, but if the fuel selector valve linkage binds with the valves shut, you'll have to sit tight until you get it working. No fuel, and you'll go no place—fast.

With the push-pull fuel linkage, it's awful easy for condensation to sneak inside and corrode the cables to the point where they won't move, and if they won't move, you won't be getting any fuel to the engine.

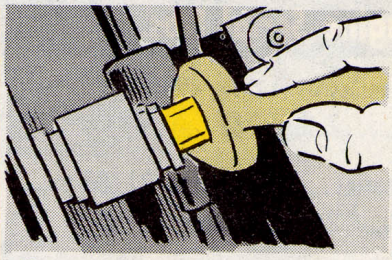
As you know, that cable linkage fits inside a round housing, makes a couple sharp bends behind the driver's seat and then scoots under the turret slip ring. The rubber coating on the linkage cracks up, moisture gets inside, and your fuel control levers won't move. Even if the cable coating isn't cracked, it's easy for condensation to form while the tank cools off after normal operation.

You can't eliminate the problem of condensation completely, but you can keep your linkage free with a little care. Working the levers back and forth from time to time will help. So will leaving the hull drain valves open while your tank is parked for any length of time so's water won't have a chance to accumulate in

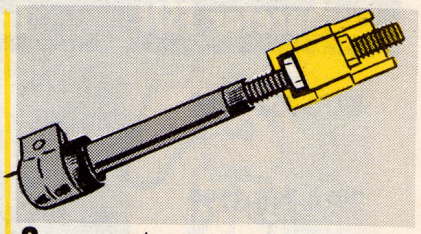
the hull. Sometimes, though, you've got to give the linkage a little oil to keep it from binding. Here's how to lubricate the linkage:



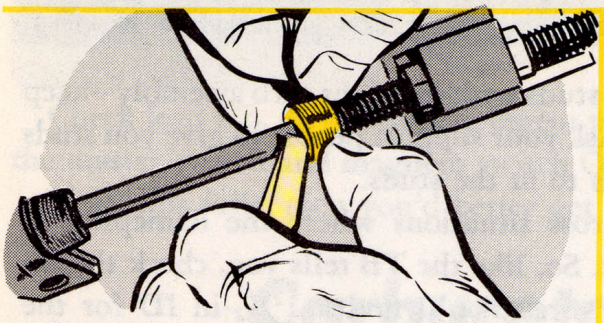
1. Remove the access plate in the turret floor.
Traverse the turret so's the opening in the floor shows the fuel cable linkage—it's right between the batteries and the generator control box.



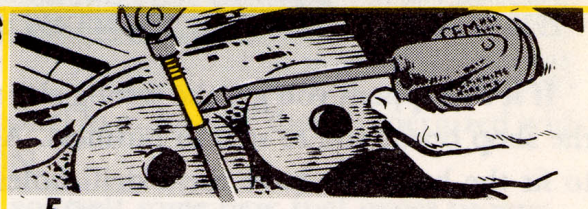
2. With a ½-in open-end wrench remove the cap screw that holds the two fuel control levers in the mounting bracket.



3. Remove the bolt holding the two cable retaining clips to the bracket at the right of the battery. Pull the two levers and cables out of the bracket.



4. Pry the rubber seal on each cable loose from the small flange it covers. A screwdriver'll do the job.



5. With a squirt can, give the cables a few shots of oil, and work 'em up and down by hand so's the oil has a chance to get all the way down inside the linkage.
Wipe off the excess oil and slip the rubber seal back over the flange.

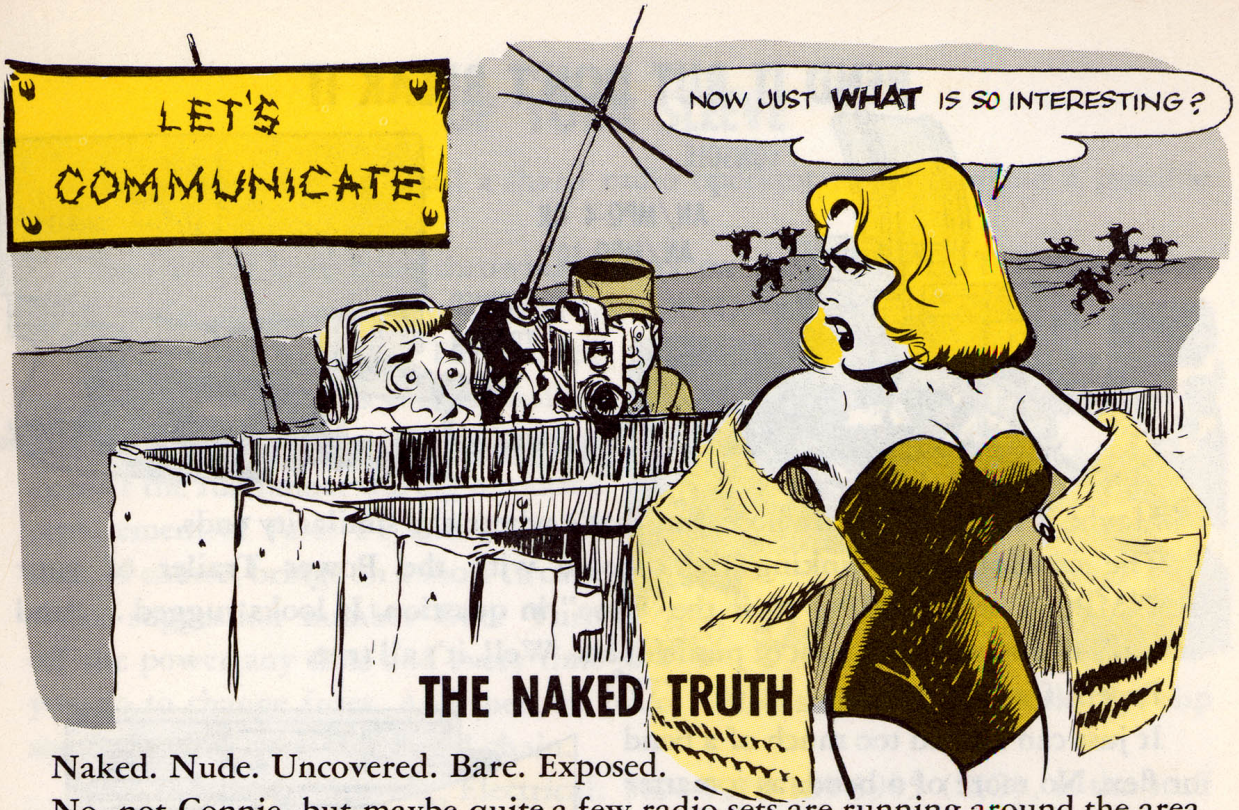
Put the control levers back in place through the bracket and replace the cap screw.

Now then, to replace the bolt holding the two retaining clips, it'll be easier if you loosen the battery front hold-down wing nut. Watch it, though when you're using a wrench that you don't cause any arcing. With the battery wing nut loosened, you can insert a screwdriver under the battery so's the battery'll tilt slightly to give you enough room to tighten the cap screw.

If your linkage binds even after you've oiled it, you've got to get help from your support outfit. In this case, you'll have to free the linkage at the source of the bind—under the turret slip ring.

With an OK from Ordnance, remove the slip ring like it says on page 288 of TM 9-7012. The rear end of the control cables is located directly beneath the rear of the slip ring mounting pad. After the pad has been removed, try to oil the cables to loosen the bind. If they still won't move, remove the cables entirely and give 'em a good soaking in solvent. FSN 6850-264-9038 will get you five gallons, FSN 6850-281-1985, one gallon. Clean the cables, oil 'em lightly, and put 'em back, replace the slip ring and you're ready to go.

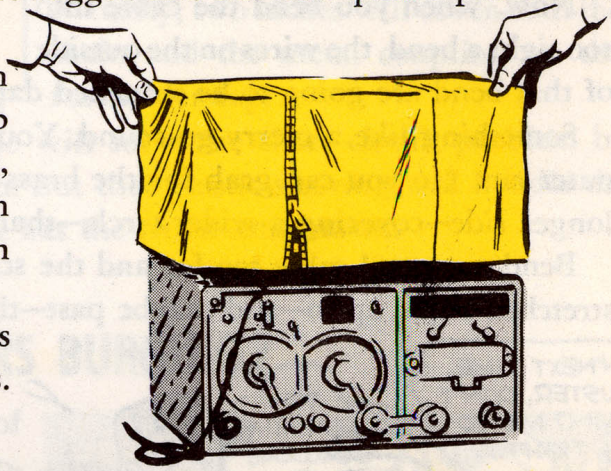
'Course, for all-round care, you'll wanta make sure you have the latest lube order (LO 9-7012, 7 Aug 57) and tech manual (TM 9-7012, 30 Aug 54) on hand.



Naked. Nude. Uncovered. Bare. Exposed.

No, not Connie, but maybe quite a few radio sets are running around the area without clothes. The AN/GRC-3 series; maybe an AN/VRC-7 or AN/VRC-10, and others.

They sit there on their vehicles exposed to the sun, sand, rain, snow, and so on, without any protection. 'Course, they're rugged and can take quite a pile of bad weather.



But those sets **do** come equipped with a canvas cover that's designed to help beat old man weather. Lots of times, though, those covers get separated from their sets or maybe never get put on in the first place.

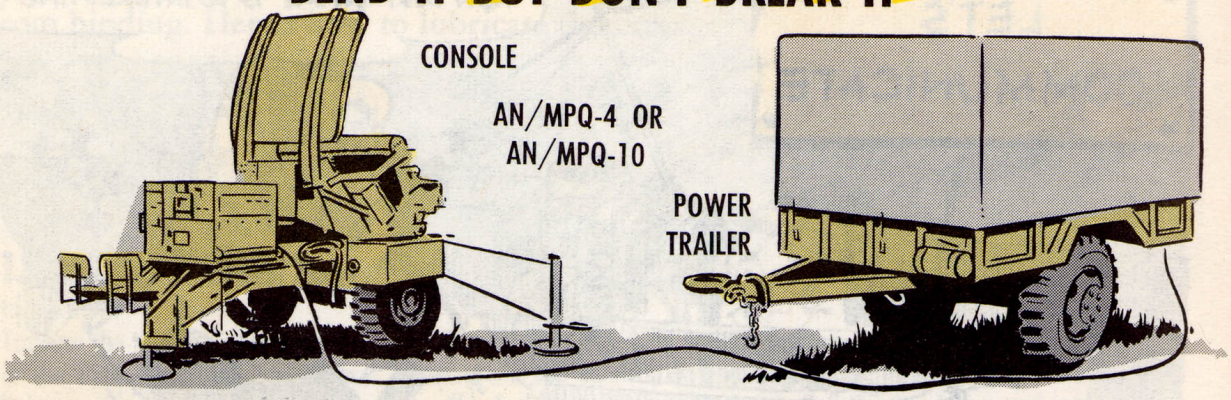
And they are items of issue, too, as listed in the appropriate SIG 7 & 8's. Like for example:

AN/VRC-7	COVER, RADIO SET: CW-331/G	FSN 5820-330-9655
AN/VRC-10	COVER, RADIO SET: CW-330/G	FSN 5820-330-9654
AN/GRC-3, 4, 5, 6, 7 & 8	COVER, RADIO SET: CW-329/G	FSN 5820-219-6078

Now those covers are issued only with the basic set and generally aren't available otherwise. Unless you want to consider 1 per 100 sets as "available" in supply.

If your set's running around naked, see if your shop or supply people can shop up some duds.

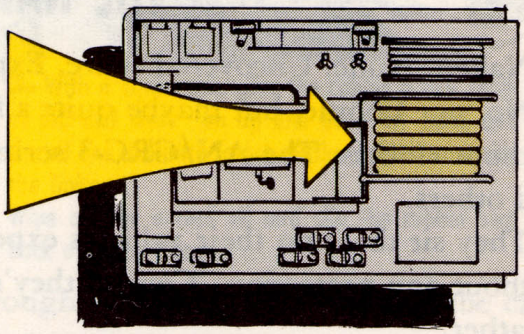
BEND IT BUT DON'T BREAK IT



Maybe it **looks** like a fire hose, but that's where the similarity ends.

The control cable linking the console with the Power Trailer of your AN/MPQ-4 or AN/MPQ-10 is the "hose" in question. It looks rugged . . . and it looks like it can stand a lot of punishment. Well, it's all true.

Except for one thing.

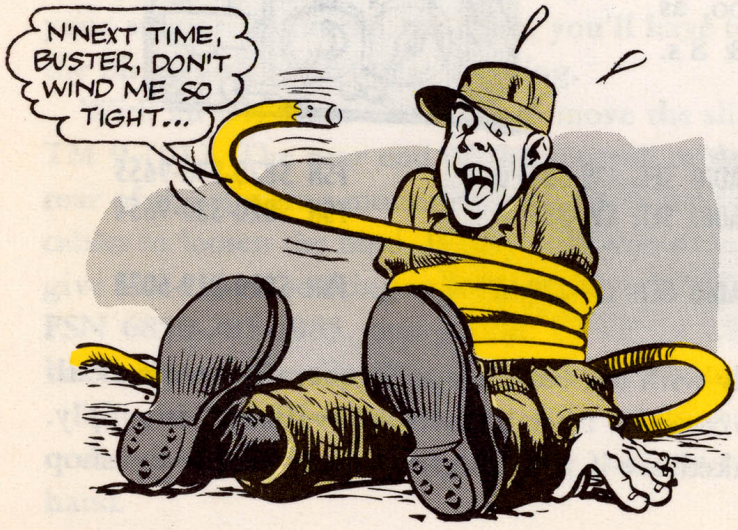


It just can't stand too much of a bend or flex. No more of a bend, as a matter of fact, than it gets when wound up on its reel. Sort of bear in mind that there're dozens of thin wires packed inside that cable.

Now, when you bend the cable into too tight a bend, the wires on the outside of that bend are going to be stretched dangerously close to the breaking point.

Something like a merry-go-round. You climb aboard one of the horses on the outer rim (so you can grab for the brass ring) and you'll actually be getting a longer ride—covering a wider circle—than the nags on the inside rim.

Bend a control cable too far and the strands on the outer rim are going to be stretched right up to—and maybe past—the breaking point.



So sort of make it SOP whenever the time comes to set up a mortar shooter to keep the control cable as straight as possible. If she has to go around a bend, make it a gentle bend.

Otherwise an expensive and badly-needed piece of electronic equipment will end up on a merry-go-round of repair, delay and deadline—with the brass ring in a sling.

UP YOUR SLEEVE

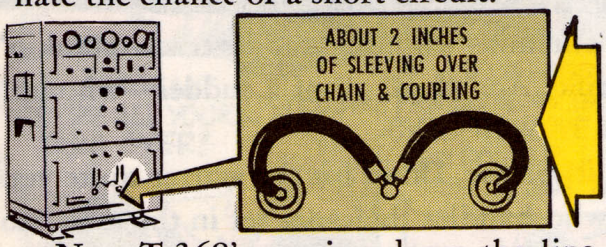
Some plastic sleeving is all a sharp radio operator needs to avoid a possible short circuit.

Those shorts have been throwing sparks on the T-368/URT Radio Transmitter—like are found on your AN/GRC-26(U) and others.

This is what happens: The beaded metal chain that holds the fuseholder cap to the panel sometimes brushes against the fuseholder during a routine replacement of fuses F1 and F2. And that, of course, brings on a short circuit.

So, suggestion number One: Turn **off** the power any time and every time you go to change fuses. And then, to make 101% sure that no sparks fly, slip some sleeving over that metal chain.

Some Insulation Sleeving, Electrical: FSN 5970-189-5905 (SIG), is the stuff for the job. About two inches worth of that spaghetti on each chain will eliminate the chance of a short circuit.



Just uncouple the chain where it joins the panel, and slide the sleeving on. Actually, two inches will cover both the chain and the metal coupling on the fuseholder cap.

New T-368's coming down the line will solve the short circuit problem by having nylon cord to replace the chain. But that plastic sleeving will handle the situation smoothly if your equipment has the chain attachment.

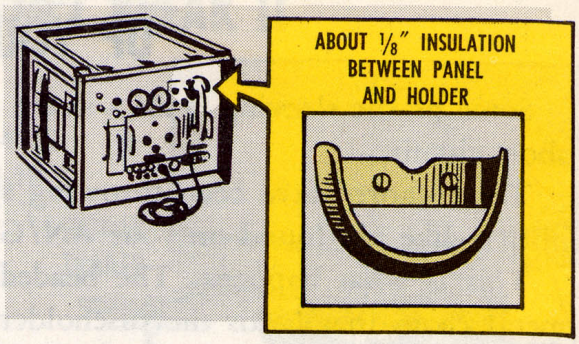
YOUR EARS BURNING?

Comes time to nestle the earpiece of an H-90/U Handset against your flapper and maybe you'll move it away—but fast.

Because it sometimes happens that the earpiece gets heated up a bit from settin' there so close to the front panel of your AN/TRC-24. Heated enough, s'matter of fact, to make the handset too hot to handle for a short time after lifting it from its cradle.

Those seconds you wait while your earpiece cools can sometimes mean a dangerous delay in communication.

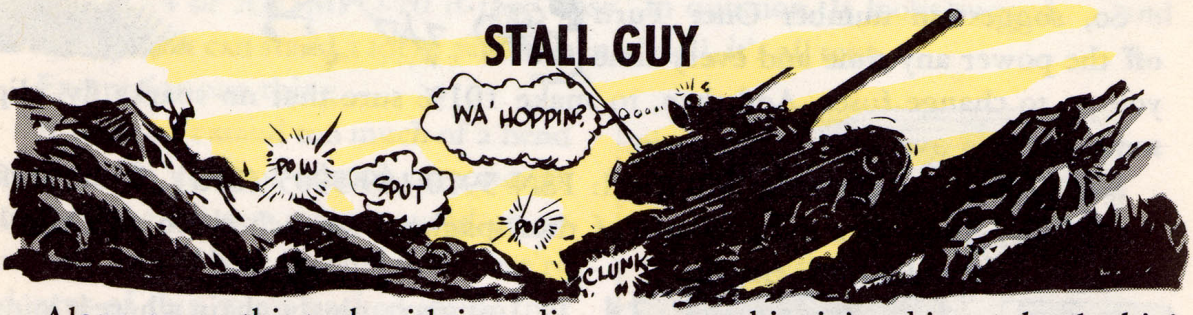
Insulation, gents, insulation. Some plywood, maybe. Perhaps some asbestos sheeting. Or tempered pressboard. Almost anything that's about ⅛-in thick and can be cut to fit between the panel and the handset holder.



Cut the material to about the same size as the earpiece—maybe a shade larger. Place it in position between the panel and the handset holder . . . and then secure it with the same two screws that hold the holder in place.

Makes for real cool cradling. No hot earpiece, no hot ear, and no sweat when you want to make with the communication on your TRC 24.

STALL GUY



Along comes this tank with its radio antennas whippin' and its tracks clankin' and the dust boilin' up all around. Terrific. And then, all of a sudden—whomp! She stalls.

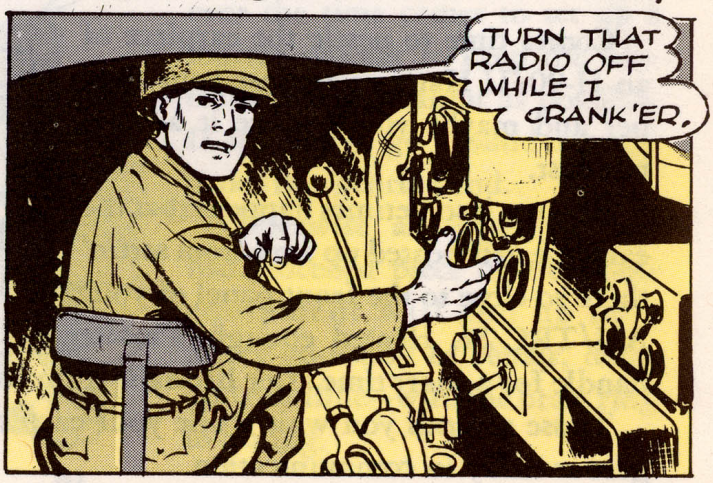
So things like that happen. But hold it, please. Don't hit the starter quite yet. 'Cause here's a chance for the loader (who handles the radio set in the tank) to do everybody, especially himself, a big favor.

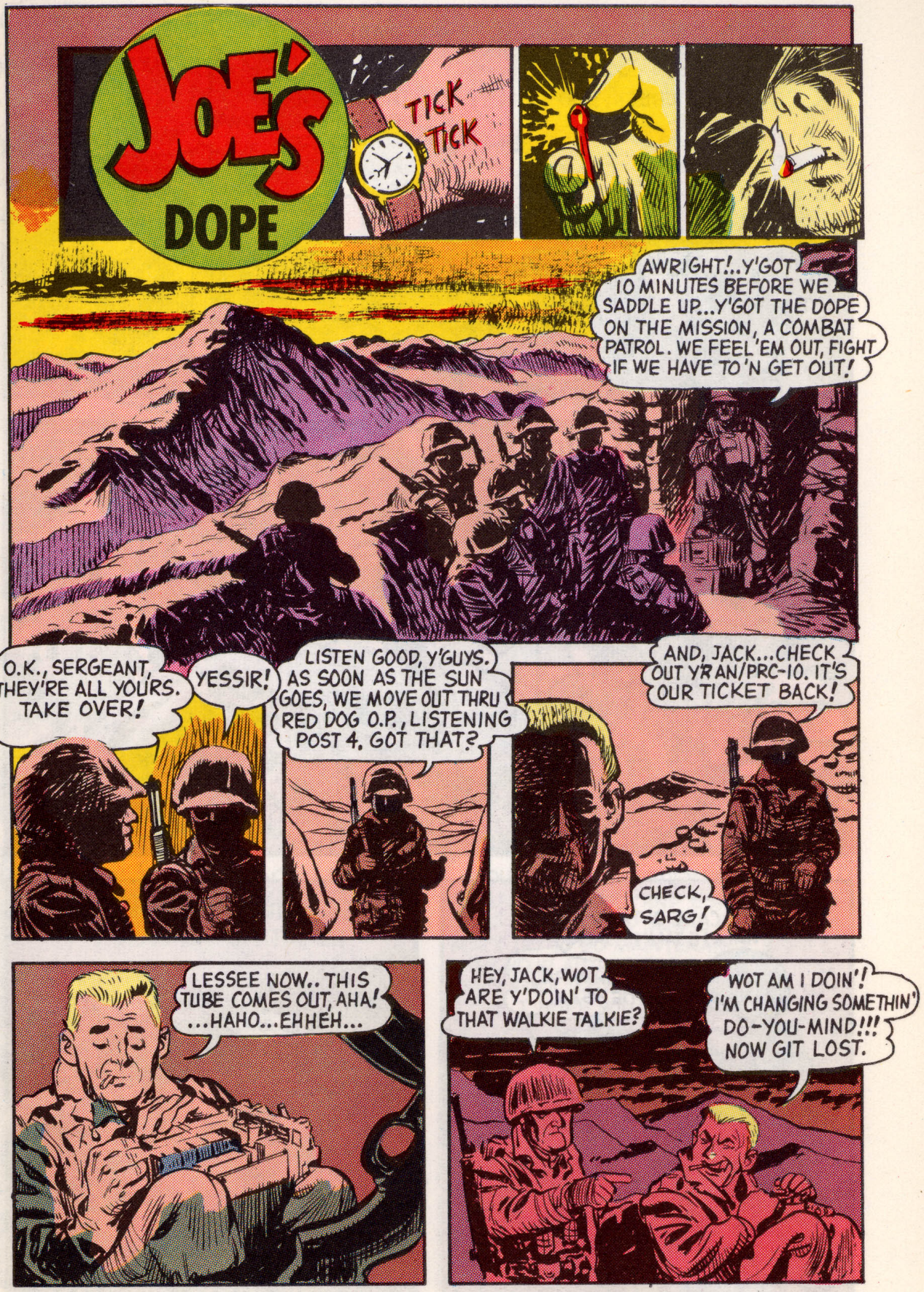
That's right, a simple thing like turning the radio **OFF** before the tank is re-started will keep that collection of tubes on the line. Also will keep your tank in touch with the outside world.

Nobody needs to be an electronic whiz kid to know that the voltage surge from a tank engine that's been kicked into life might damage the radio. It doesn't usually happen—but it could just the same.

So SOP says to play it safe all the way. The loader, of course, is the man to throw the radio's MAIN SWITCH to OFF. And just as soon as the engine is re-started and purrin' again, throws the switch ON.

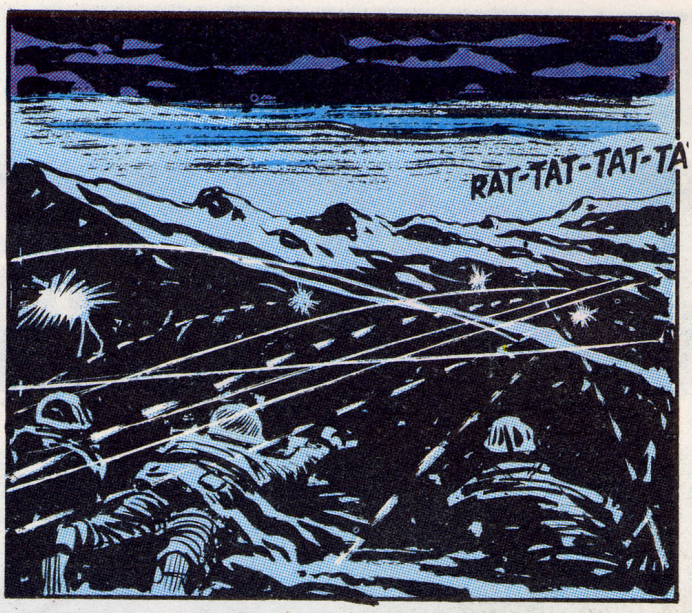
Simple as throwing a switch, and it'll keep your Angry-3 happy.



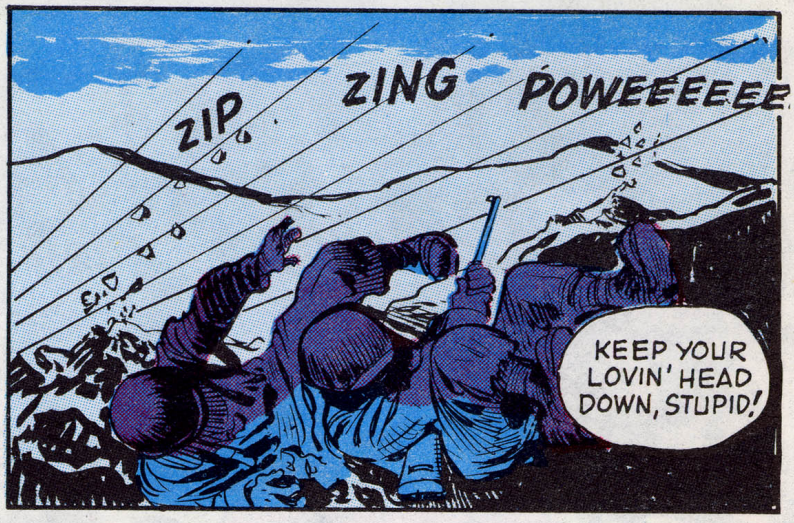

JOE'S DOPE
TICK TICK
AWRIGHT!..Y'GOT 10 MINUTES BEFORE WE SADDLE UP...Y'GOT THE DOPE ON THE MISSION, A COMBAT PATROL. WE FEEL 'EM OUT, FIGHT IF WE HAVE TO 'N GET OUT!
O.K., SERGEANT, THEY'RE ALL YOURS. TAKE OVER!
YESSIR!
LISTEN GOOD, Y'GUYS. AS SOON AS THE SUN GOES, WE MOVE OUT THRU RED DOG O.P., LISTENING POST 4. GOT THAT?
AND, JACK...CHECK OUT Y'R AN/PRC-10. IT'S OUR TICKET BACK!
CHECK, SARG!
LESSEE NOW.. THIS TUBE COMES OUT, AHA! ...HAHO...EHHEH...
HEY, JACK, WOT ARE Y'DOIN' TO THAT WALKIE TALKIE?
WOT AM I DOIN'! I'M CHANGING SOMETHIN' DO-YOU-MIND!!! NOW GIT LOST.

...WHAT YOU'RE DOIN', JACK, IS UPPER ECHELON WORK...YOU'RE JUST SUPPOSED TO PULL AN OPERATOR'S CHECK, THAT'S ALL!!
...YAAH... THIS HERE CHANGE WILL INCREASE THE RANGE BY THREE MILES... HOW'S THAT FER KNOW-HOW, EH?
MAYBE!! BUT I'D STICK TO WHAT IT SEZ IN TM 11-612.. WHICH IS STRICTLY OPERATOR MAINTENANCE!!
Y'DON'T BODDER A GENIUS WITH DETAILS... BEAT IT!!
AWRIGHT, SADDLE UP!
TAKE CARE O' THAT WALKIE TALKIE, JACK!
NO SHIMPAI, JOE-SAN.
...AS THE SUN DIPPED BEHIND THE SAFETY OF THE RIDGE...
SHH! YOU GUYS
COUGH
CRUNCH
CLATTER

ZIP
POOINNNNG
ZING
HIT-THE-DIRT!

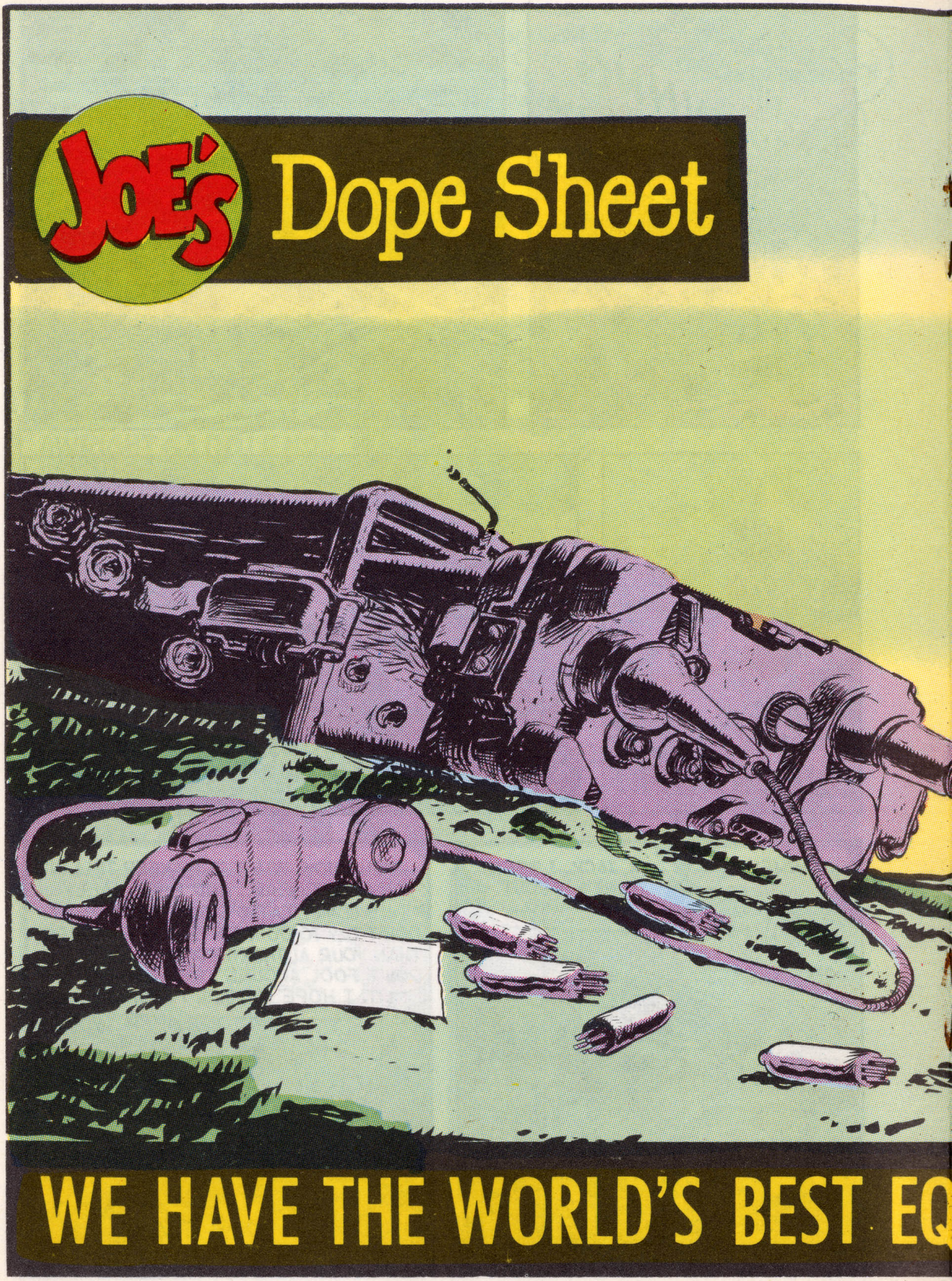

RAT-TAT-TAT-TA

BURRRRRP...


ZIP
ZING
POWEEEEEEE
KEEP YOUR LOVIN' HEAD DOWN, STUPID!

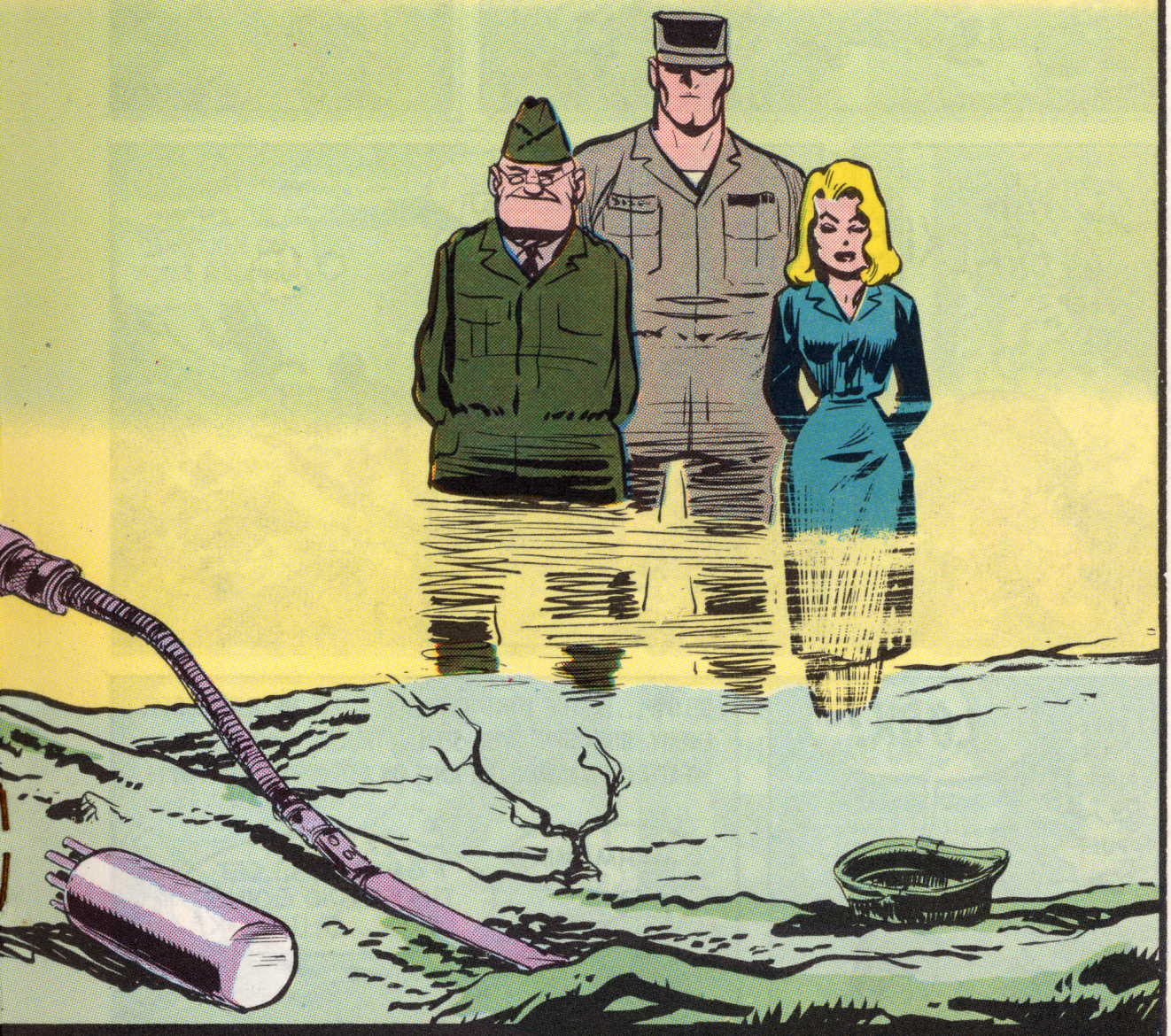
WHEW..
ER, JACK. I BEEN THINKIN' ABOUT YOUR RADIO..
POW
POW
ZINGGGGGGG

...YOU KNOW WHAT THEY KEEP TELLIN' YOU ABOUT GEAR.. AND ESPECIALLY THIS COMPLICATED SIGNAL EQUIPMENT. DON'T TRY TO DO MAINTENANCE HIGHER THAN YOUR AUTHORIZED ECHELON, AND DON'T FOOL AROUND TRYING TO CHANGE IT. I HOPE YOU DIDN'T GOOF UP.


JOE'S
Dope Sheet
WE HAVE THE WORLD'S BEST EQ

JOE'S Dope Sheet
This equipment of battle will rot,
But not from the lead it has caught.
Tho bullets have ripped it,
That wasn't what flipped it;
UNAUTHORIZED FIX called this shot!
WE HAVE THE WORLD'S BEST EQUIPMENT... Take care of it

This equipment of battle will rot,
But not from the lead it has caught.
Tho bullets have ripped it,
That wasn't what flipped it;
UNAUTHORIZED FIX called this shot!



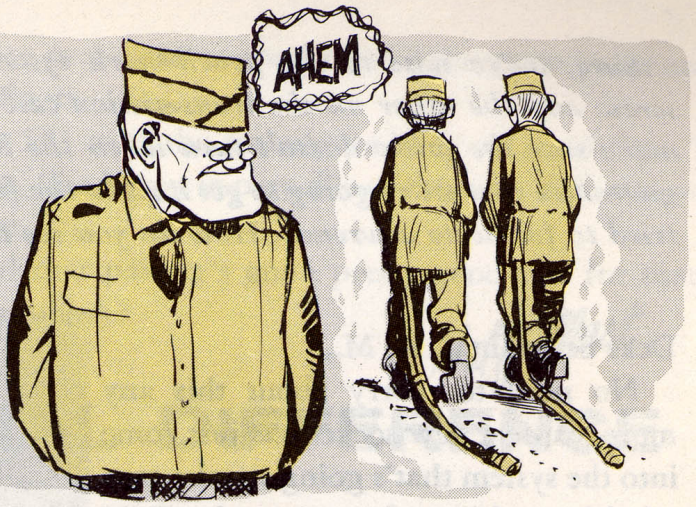
QUIPMENT . . . Take care of it

...AW, QUIT WORRYIN'--AIN'T YOU GOT ENOUGH ON...OH... YES SIR??
JACK...GET ON YOUR PRC-10 AND SEND THIS INFO BACK!
PUFF
PUFF
PUFF
PUFF
BIG FACE ONE FROM LITTLE NOSE FOUR-OVER
CLICK
BIG FACE ONE FROM LITTLE NOSE FOUR
CLICK
CLICK
SQWAK
CRACKLE
PEEP
DOGGONE... I BEEN TRYIN' FOR FIVE MINUTES... GET NOTHIN' BUT STATIC... ER LET'S TRY FOR HIGHER GROUND... THAT OUGHTA HELP.
PUFF
PUFF
PUFF
PUFF
LOOK!
BELOW... IN THE LONG DEFILADE... ONE OF THE BIGGEST ENEMY BUILDUPS EVER SEEN... TRUCKS, TROOPS, WEAPONS SWARMIN' LIKE ANTS ON A DROPPED LOLLYPOP!!
MAHMAMIA!
F'GAWSAKES... GET THAT RADIO GOING, JACK... Q-U-I-C-K!

BIG FACE ONE FROM LITTLE NOSE FOUR CLIK CAAMMON!!
HURRY, JACK, HURRY! WE'LL BE SPOTTED UP HERE ANY MINUTE!
SOWAK CRACK
GOOD GRIEF... IT'S ONLY WORKIN' ON RECEIVING... I CAN HEAR BUT I CAN'T TRANSMIT!
ER, LET'S BUG OUT!
WHAT'S THE IDEA... HEY I'LL BET IT'S THAT GIDGET YOU CHANGED IN THE WALKIE..Y'FOULED UP THE WORKS, DIDN'T YA!!...DIDN'T YA...
C'MON, LET'S GIT!
WHERE YOU BEEN, JACK? ...DID YOU GET THROUGH ON YOUR RADIO??
ER...NO...SIR... IT'S ON THE BLINK!
CHUG-CHUG-CHUG-CHUG
HIT THE DIRT!!
THEY FOUND US! THIS PLACE IS TOO HOT NOW... LET'S GET OUTTA HERE!
NOW LET ME SEE.. WHERE DID I GO WRONG?
JACK...HEY, JACK... C'MON...COME ON!!
MAYBE IF I INVERT THE LITTLE GISMO AT THE TOP...

JACK! JACK... OWWWWWW
ZING
ZIP
POWEEEEE
POIINGGGG...
YEP, JACK NEVER DID GET THE THING TO WORK!
CHEE! TOO BAD... ...AND WHAT HAPPENED TO YOU...??
ME?..WHY, BEIN' THAT NEAR, NATURALLY I GOT KILLED!
NATURALLY! BOY, YOU GUYS BACK IN KOREA SURE..
HUH?
HEY!!
HEY, JOE, HOW'D YOU MAKE OUT ON THAT RADIO YOU WERE GONNA DOCTOR UP...
D-O-C-T-O-R UP?? LISSEN-OUR JOB IS FIRST ECHELON MAINTENANCE. ANYTHING ELSE WE LEAVE FOR THEM AS IS AUTHORIZED, SEE!?

QUESTION AND ANSWER DEPARTMENT

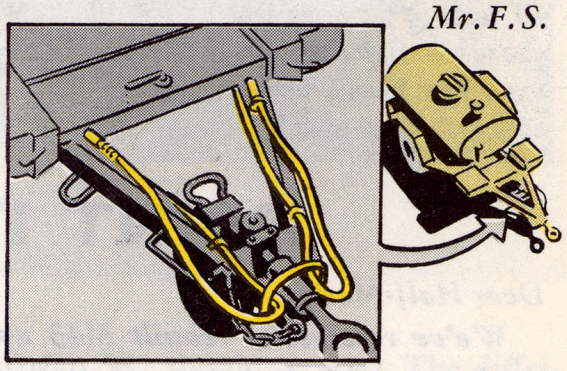


HANDY FOR HOOK-UP

Dear Half-Mast,

What's the reason for fixed intervehicular cables and air brake hoses on the "A1" models of the cargo, chassis, and water tank trailers instead of the detachable kind that came with the M104 and M106 trailers?

Mr. F. S.



Dear Mr. F. S.,

Those detachable cables and hoses on the G754-series 1½-ton two-wheel trailers had a habit of disappearing just when they were needed. So it seemed logical to tie 'em to the trailers, where they're going to be needed anyway.

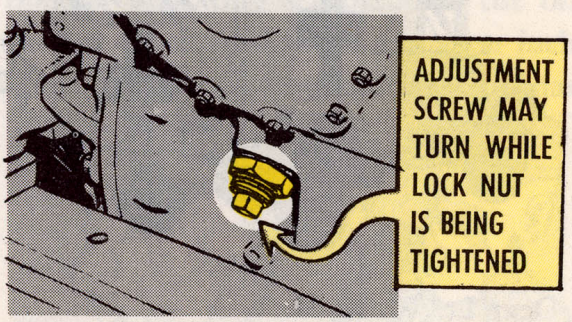
And besides, it saves money on the M103A1, M104A1, M105A1, M106A1 and M107A1 trailers not to have couplings on both ends by having one end permanently attached.

Half-Mast

WONDER WRENCH

Dear Half-Mast,

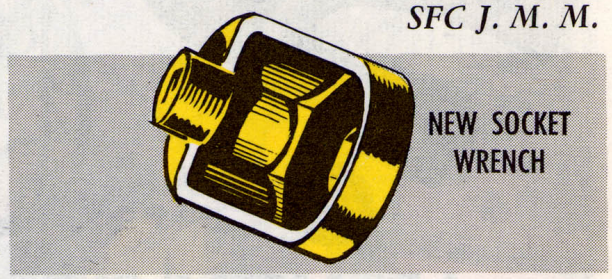
We have a lot of trouble in our tank outfit while adjusting the low range or reverse band in our CD-850 series transmissions.



You know that sometimes the guys don't watch the adjusting screw after making the adjustment and it turns when they tighten the locknut. Then, they're right back where they started from—and maybe worse because they think it's set.

Sure, we're wise to the pencil-mark system—one line across the top of the screw and the other on the transmission case directly in line with the screw—to make sure the screw doesn't turn when the locknut is tightened. But that's no guarantee that we're going to get it right the first or even the fifth time. We even tried to fabricate a wrench. How do you see this?

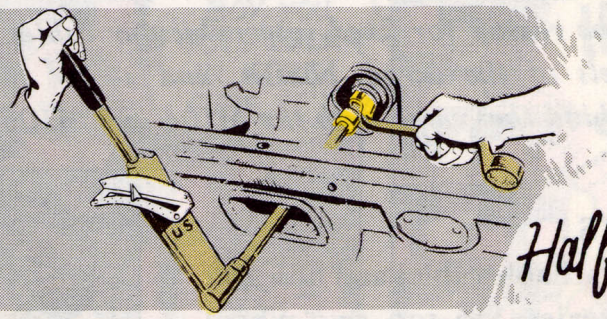
SFC J. M. M.



Dear Sergeant J. M. M.,

No need to worry about this any more 'cause a new socket has just come into the system that's going to take care of this problem. It goes under FSN 5120-626-1842 and can be used for **all** vehicles with the CD-850 series transmissions. It's now part of your 2nd echelon special tool set B.

This socket will let you torque the adjusting screw locknut to whatever foot-pounds your TM says, at the same time you're holding the adjusting screw from turning with an open end or box wrench.



Half-Mast

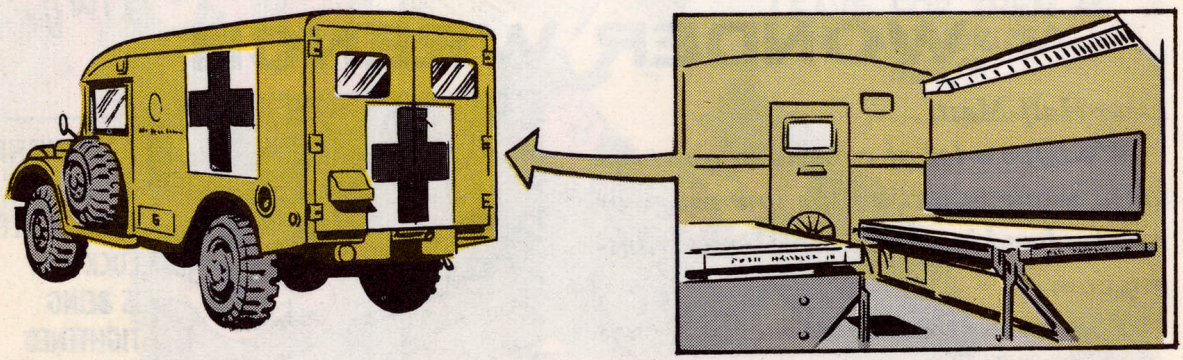
PAINT IT PASTEL

Dear Half-Mast,

We've received a rebuilt M43 ambulance that has the patient compartment walls painted light green and the floor painted gray.

It's the first ambulance I've seen with these colors. Should we repaint it in OD? Or is there an MWO that calls for green and gray?

1st Lt W. R. M.



Dear Lt. W. R. M.,

Chances are the painter did that re-decorating job with one eye on Change 2 (15 Nov 56) to AR 746-2300-1 (29 Dec 55). Para 5m of that change says panel

trucks with inside lighting—where men have to work—get light green paint on the walls and ocean gray on the floors.

Para 5b of TM 9-8030 (2 May 55) calls the ambulance body a "panel-type," and installation of a surgical light, like it says in para 42a of the same TM, means somebody may have to work there.

Put two and two together and that painter's got a pretty good case for that two-tone pastel paint job, don't ya think?

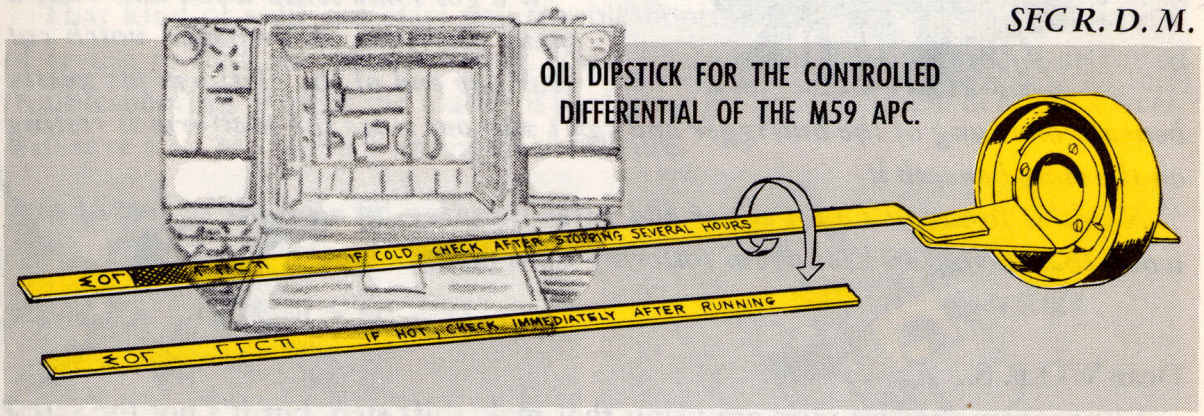
Half-Mast

DIFFERENTIAL DIFFERENCE

Dear Half-Mast,

Just how do I read the oil dipstick in the controlled differential for our M59 APC? Note 6 in the LO for the vehicle seems to leave it open to a few interpretations.

SFC R. D. M.



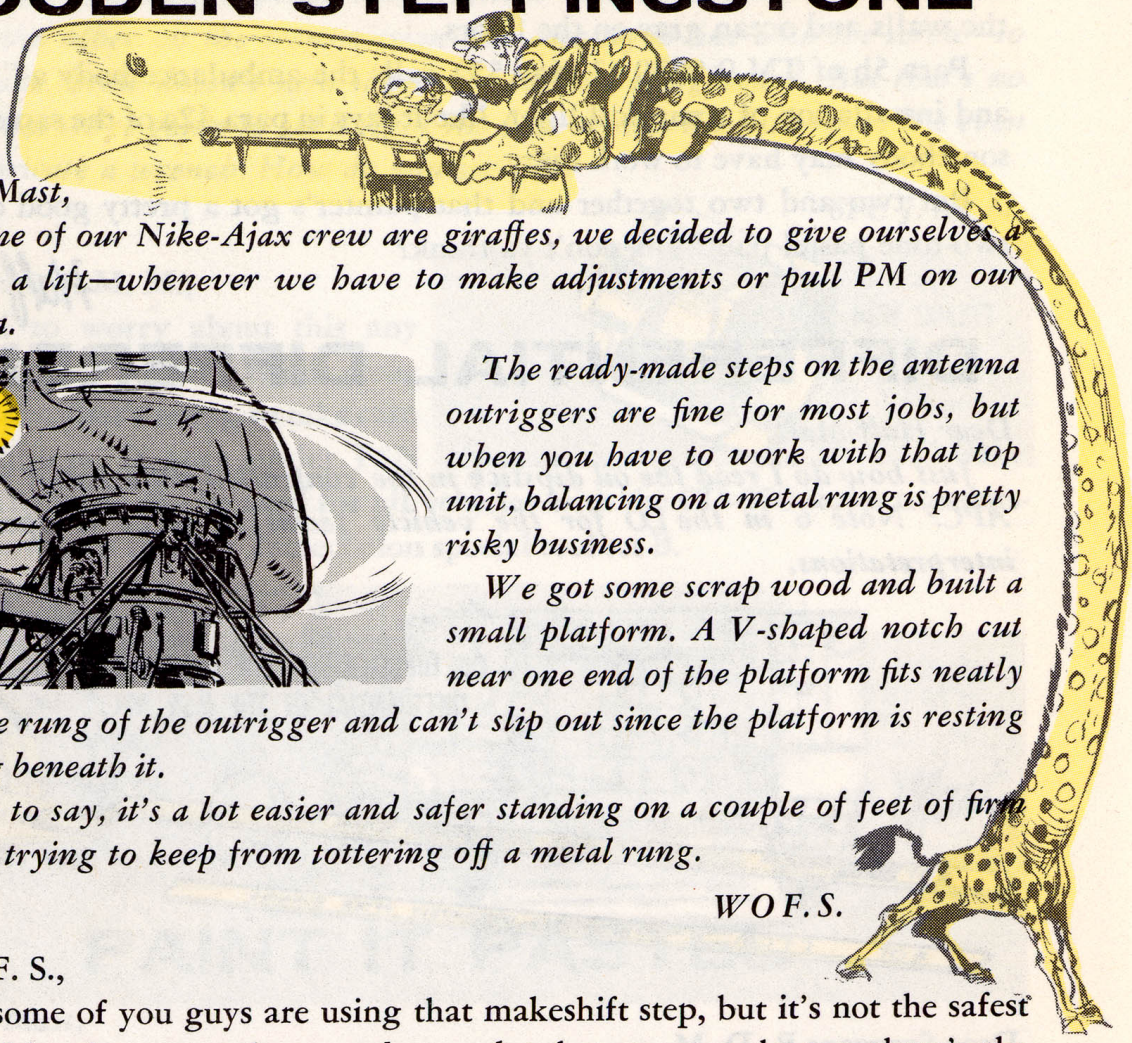
Dear Sergeant R. D. M.,

Here's the way Note 6 in LO 9-7002 (30 Jan 58) should be read. The differential oil level should be checked daily **before** operation. If the oil level at that time is lower than the one-inch mark on the dipstick, you add oil to bring it up to the one-inch mark. That means even if the vehicle has been sitting overnight or longer, the oil will be cold and its level should read as close to the one-inch mark as possible—but no lower.

After you've gotten your M59 up to normal operating temperature the oil will foam slightly and expand, making your hot check read about a quarter inch below the FULL mark or slightly higher. This depends on how much the oil has expanded due to the oil temperature. But in any case, **don't** let that oil get above the FULL mark.

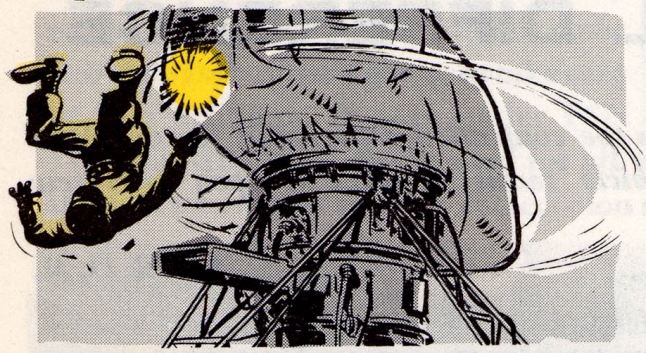
So the general rule is: The oil should not go above the FULL mark when hot and never below the one-inch mark at any time.

WOODEN STEPPINGSTONE



Dear Half Mast,

Since none of our Nike-Ajax crew are giraffes, we decided to give ourselves a break—and a lift—whenever we have to make adjustments or pull PM on our acq antenna.



The ready-made steps on the antenna outriggers are fine for most jobs, but when you have to work with that top unit, balancing on a metal rung is pretty risky business.

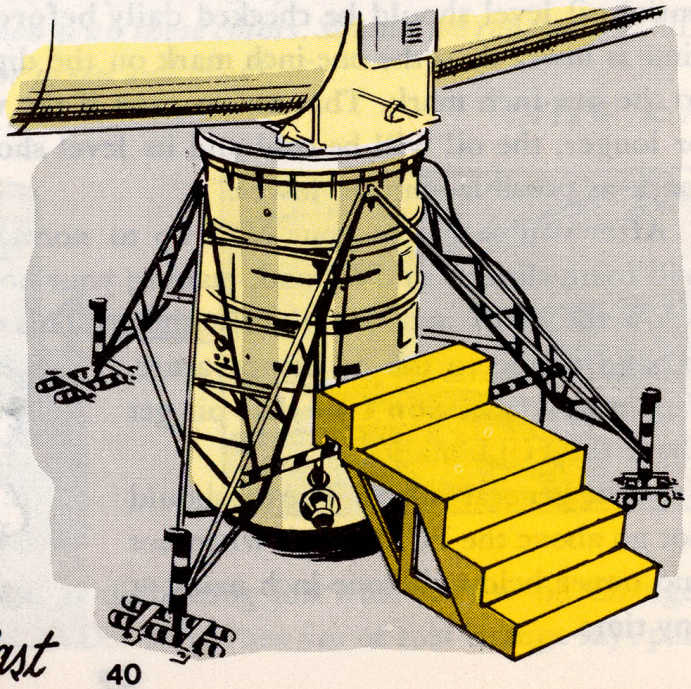
We got some scrap wood and built a small platform. A V-shaped notch cut near one end of the platform fits neatly beneath one rung of the outrigger and can't slip out since the platform is resting on the rung beneath it.

Needless to say, it's a lot easier and safer standing on a couple of feet of firm wood than trying to keep from tottering off a metal rung.

WO F. S.

Dear WO F. S.,

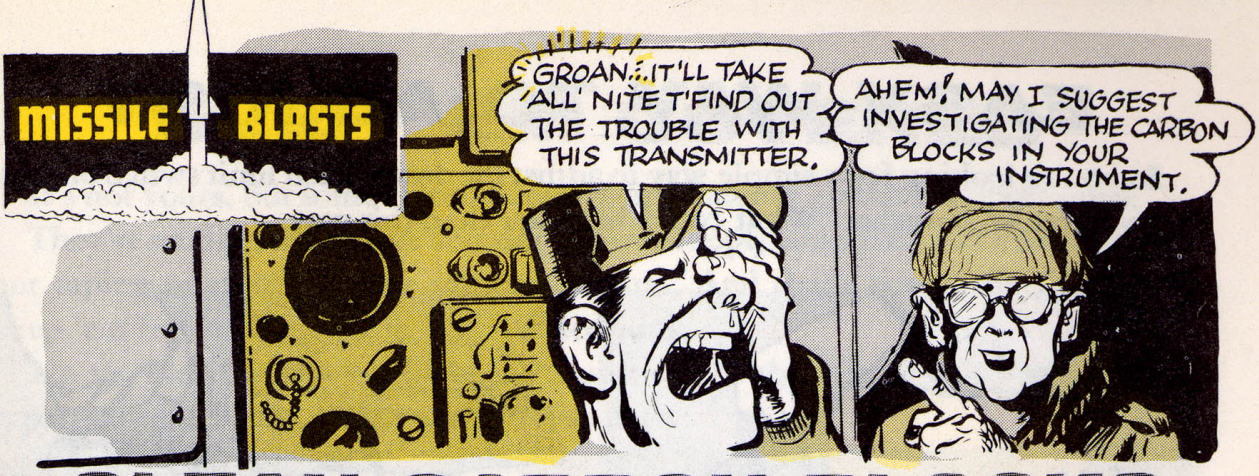
I know some of you guys are using that makeshift step, but it's not the safest bet. First, if by chance you happened to make that step any larger, there's the chance you'd be putting too much stress and strain on the outriggers—they're not built for that.



Second, and most important, should a brisk wind come along and rotate the antenna real sudden-like, you're apt to find yourself on the ground, nursing one big malfunction—**you.**

There is a way out, though. You can build yourself a stair-type platform, high enough to let you do your job minus the balancing act. The largest step is wide enough to let you step down quickly and safely in case of emergency.

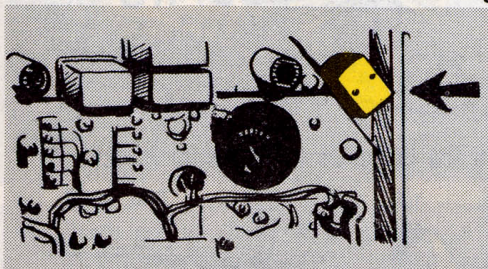
Half-Mast



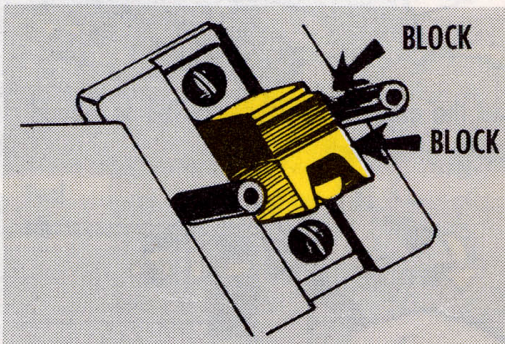
CLEAN CARBON BLOCKS

Did you ever have this happen to you when you check the reverse current diode on your Nike Hercules track radar transmitters? You find the magnetron current meter either fluctuates or reads real low. Or maybe the high voltage will read too high or the power supply current will show up low.

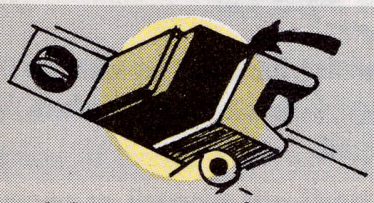
That kind of stuff can start you troubleshooting your way into a long session of trying to find out what's wrong. Read on and you'll find a real shortcut to troubleshooting. Fact of the matter is performing a little maintenance once a week will save a lot of trouble hunting in the future.



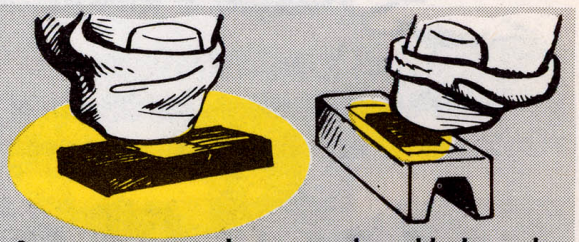
The deal is you've got four carbon blocks in those transmitters—the idea being to protect you and the equipment from high voltage.



Each block is actually two blocks . . .



and there wants to be an air space between them. Trouble is, dust builds up, the air space closes up, you get sparking, you lose protection and your meter readings get fouled up.



So . . . once a week remove those blocks and go over 'em lightly with a piece of lint-free cloth.

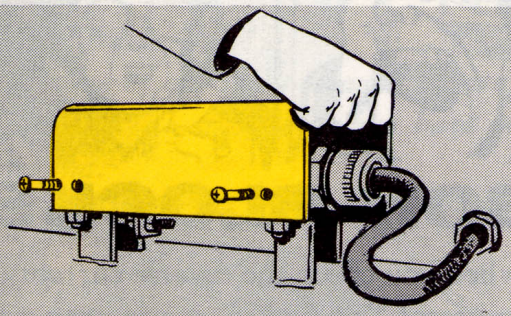
Crocus cloth is rough on the blocks—so you want to stay clear of the stuff. Every time you use it, you rub away some of the carbon block. Next thing you know, you've got such a big gap, you lose the protection.

Your cleaning chores'll be over once those blocks are MWO'd out of the system by spark gap assemblies.

EASY WAY TO ADJUST

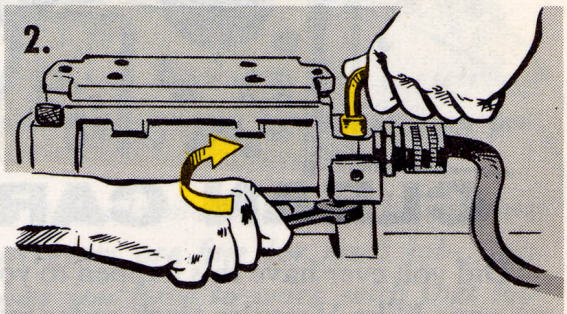
So you're looking for a simple way to adjust the down-latch limit switch on your Nike-Hercules launcher. What could be easier than this way.

1.



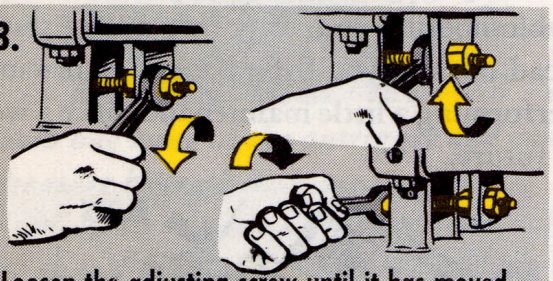
Erect the beam with the missile on it. Take the limit switch cover off.

2.



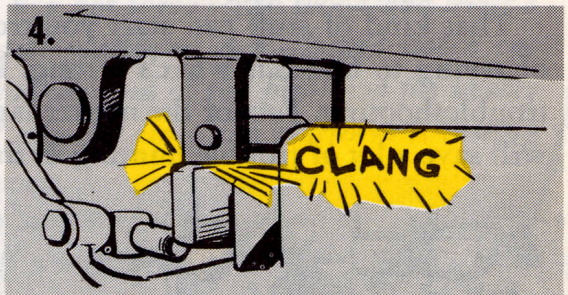
Loosen the four limit switch mounting screws.

3.



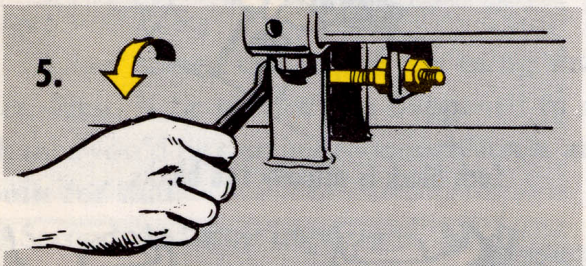
Loosen the adjusting screw until it has moved about $\frac{3}{8}$ of an inch.

4.



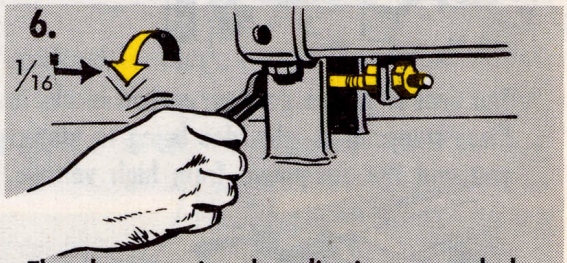
Run the beam down to where it locks.

5.



Turn the adjusting screw in the direction of tightening (clockwise) until the motor stops.

6.

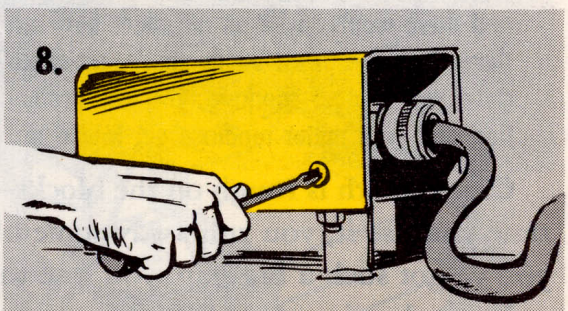


Then keep turning the adjusting screw clockwise $\frac{1}{16}$ in. $\pm \frac{1}{32}$ beyond the point where the motor turned off.

7.

Tighten down the four mounting screws and the adjusting screw.

8.



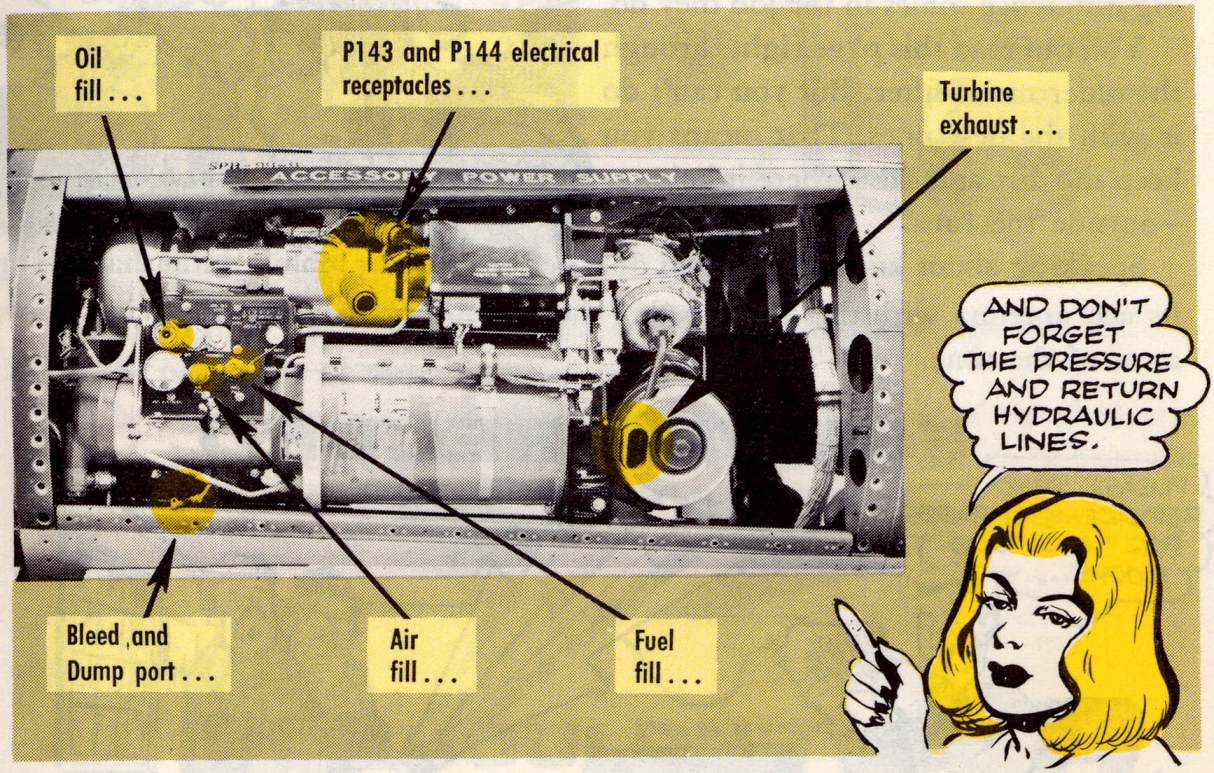
Put the limit switch cover back on. That's it.

KEEP' EM COVERED

It's not yours, but some Hercules outfits are shaking up their support units.

They're sending the missile accessory power supply units back to Ordnance without taping or capping some important parts. And that's not good. You wanna keep 'em free of dirt, grime and assorted junk.

No sir. Next time you take an APS unit out of the missile so's you can get it repaired, remember to tape or cap these parts:



CEILING LIMITED

Moisture—that old bugaboo—can cause you a passle of trouble if you let it get out of hand. That's why it's real important to inspect the limit switches on your Nike elevator for adjustment and operation.

Failure of the switches can prove to be a costly letdown and leave your elevator at a stand-still. Damage to the missile racks can add up to thousands of dollars with one quick jolt.

During your quarterly check, you want to take the covers off the limit switches and give them a real sharp eye for corrosion, moisture, defective wiring, moveable contacts, and points.

It'll sure pay off.

NEW FILTER

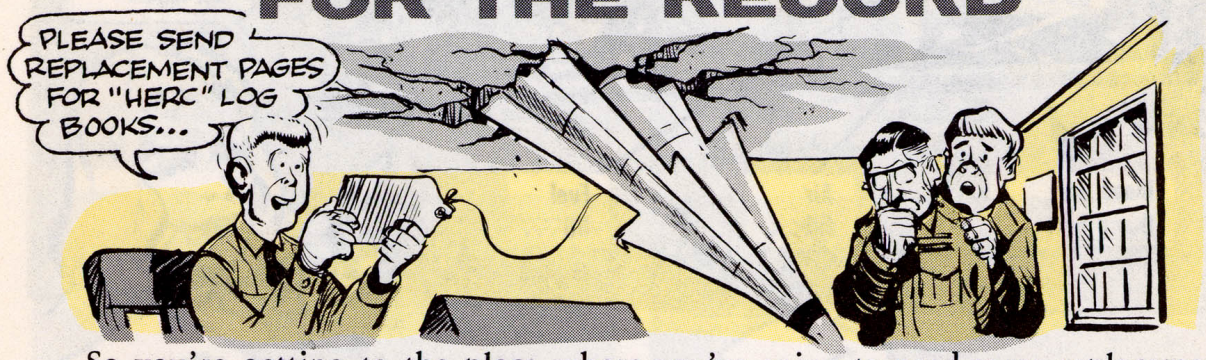
Has your Nike outfit been sent the new metal filters for your acquisition antenna? You know the ones—they go in the modulator assembly, coupler assembly and panel group.

They come to you under the same stock number as the metal filter you've been getting—FSN 1230-692-1461. The big difference comes in the job they do.

You can read this page right through the older metal filter. But you can't do it with the new ones. That means you keep the dirt and dust where it belongs —outside the tubs.

Speaking about keeping dirt and dust out, it's a smart mobile outfit that sets up its acq antenna with the filters facing away from the direction the wind blows most of the time.

FOR THE RECORD



So you're getting to the place where you're going to need some replacement pages for your Nike-Hercules Missile Log Book. And you're wondering how you'll latch on to them 'cause the sheets don't have DA Form numbers.

Until DA Form numbers are given these sheets, there's a way to get the ones you want. **WRITE TO:**

Commander
U.S. Army Ordnance Missile Command
U.S. Army Rocket and Guided Missile Agency
Redstone Arsenal, Alabama
ATTN: ORDXR-FMN

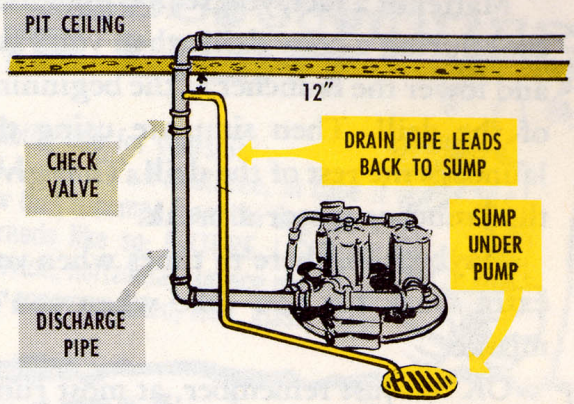
Tell the people at Redstone what sheets you want by the title on top of the page.

Remember, tho . . . the Herc missile log book is an interim pub. So please keep your requests for replacement pages down to rock bottom until the log book becomes a regular DA pub or form.

DON'T LET 'EM FREEZE

Some Nike outfits have been running into trouble with water freezing in the elevator pit sump-discharge-pipe—the part that's above ground, that is.

Seems that when the sump pump isn't operating, a check valve retains the water in the pipe above the ground. With the pipe clogged with ice, the pump can't make any headway and runs continuously. This shortens the life of the motor.



To keep down the chance of overworking your sump pump due to a freeze-up, you tap the discharge pipe about 12 inches below the ceiling of the pit. Then you put in a ⅛-in or a ¼-in drain pipe leading back to the sump.

The drain pipe will lower the water level in the discharge pipe and will cut down the possibility of water freezing in the line.

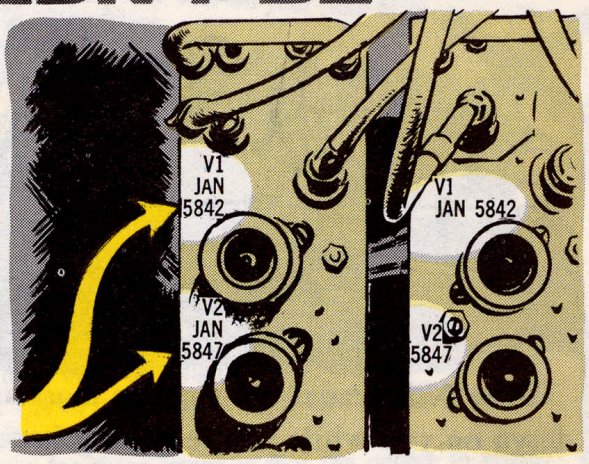
It'd be a good idea, too, to check the sump holes and get rid of the mud, silt, and gook that's collected there. Lots of pumps fall down on the job because the sand 'n stuff clogs and chokes 'em.

WHERE THERE'S SMOKE...

IT SHOULDN'T BE

What a difference a coupla numbers can make.

As a f'rinstance . . . that the 5847 and 5842 tubes in the sum pre-amps and IF main amps in your Nike-Ajax RC van.

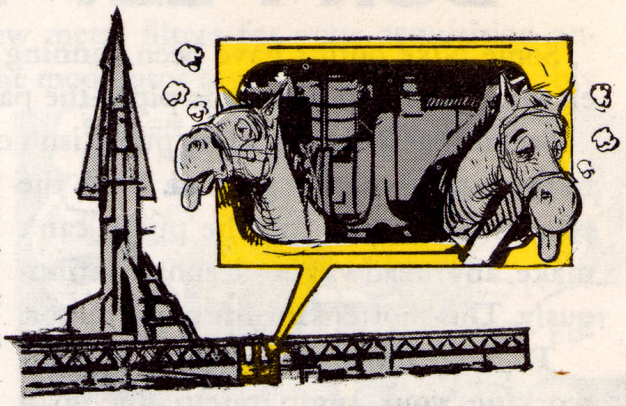


Comes the morning after a bad night before and you have to replace the tubes, you'd better look long and hard to make sure you get the tubes in the right sockets. If you read the "7" as a "2" on the 5847 tube or see a "7" instead of a "2" on the 5842 tube, and you put 'em in the wrong sockets, look out.

The only kind of signal you'll get is a puff of blue and white smoke as resistors and capacitors go on the fritz.

In other words, know your tubes, down to the last number.

REST THOSE HORSES



It's a smart crew that goes slow-and-easy in raising the Nike-Hercules launcher.

Matter of a fact, you're playing it real cool during a crew drill when you raise and lower the launcher at the beginning of the drill. Then simulate using the launcher the rest of the drill. That gives the launcher motor a break.

Maybe, tho, there're times when you've got to call on those 20 horses to do some extra work for you—like when you're checking out the hydraulics on an Ajax missile.

OK . . . just remember, at most run the motor no more'n 10 minutes and shut it off for 20 minutes. If you have the time, tho, six minutes running time followed by a two-hour shutdown is even better.

It's also a good idea to take off the hydraulic power package cover before a drill so's air'll be able to circulate around the motor.

You also want to listen for a change in the sound of the motor. If it changes, it could be one of the three phases has gone out. Turn it off then and there and call in your mechanic. He can run a check with a voltometer.

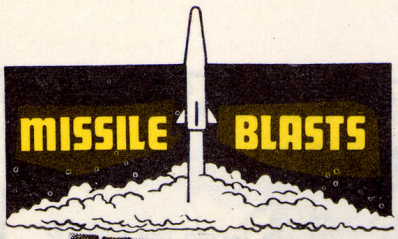
Keep your support unit's number handy so's you can buzz them if your mechanic can't do anything for the motor.

LOOK OUT BELOW

That Nike radar RF test set mast assembly won't exactly bounce if it comes down on you while you're raising it.

And one man is right in line with the mast as he lets out slack on the winch.

So try this: Coil about 20 feet or so of slack wire in front of your winch. Once the 60-foot pole has taken up the 20 feet, you can take up your post at the winch. That way, if something gives, you can see the pole coming down to meet you in time for you to get away.



COMES THE LIGHT

When you do your support unit a favor, you're doing one for yourself.

Take the ceiling fixture in your launcher control trailer as a f'rinstance. In case it needs replacing, your support people'll want to know that it comes from the Engineers. Its FSN is 6210-801-9823, and the nomenclature reads like so: FIXTURE, LIGHTING: DC, 24 to 28 volt, steel, painted, integral securing device, horizontal surface mounting, two double contact bayonet. Candelabra base lamps accommodated, lens, glass, Clear Luminator Inc. L-8474 or equal.

DON'T TOUCH

Maybe you did it in your Nike-Ajax outfit. But you don't fool with those waveguide shutters in the missile and target tracking radars at your Hercules site.

The shutter assemblies get a lifetime lube when they're made. And if they don't open and close right, or get banged up somehow, buzz your support unit. It's strictly a job for them or depots, like it says in TB Ord 1430-34/1 (9 Jan 59).

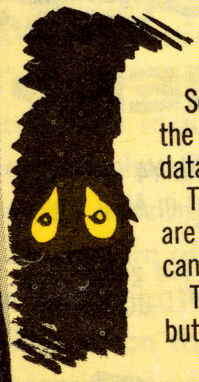
A REAL CHEWING

Sure . . . you're supposed to put the screws to the front drop door on your Nike MTR and TTR track range amplifiers. But use the right screwdriver.

The four cross-tip screws on each door are made out of soft metal, and anything but the right screwdriver will chew out the screws worse'n a recruit who forgot to show up for a detail.

And the right screwdriver is the No. 1 cross-tip, with the 3-in blade. It goes under FSN 5120-240-8716 . . . and is in your general mechanics tool set.

IN THE DARK?

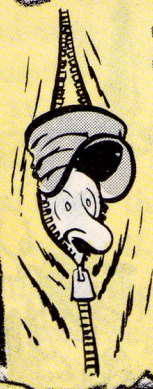


So you guys in the launcher area have been scrounging 3-volt, .19-amp lamps from the IFC boys at your Nike-Ajax site. You're using 'em to light up the dial of the AG data converter on the door of the simulator—right?

Trouble with hitting up the IFC area for those lamps is that the people in supply are gonna start wondering why they're being used so fast. So, see if your support unit can get 'em for you before you borrow any. The FSN is 6240-155-7864.

Things are in the mill to let you get 'em direct, instead of from your support outfit, but you'll have to wait for a change in ORD 7 SNL Y-8 for that.

ZIPPITY DO-DAH

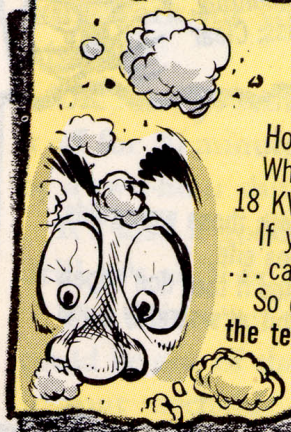


It only takes a couple extra seconds, so when you want to get inside the radome of your Nike-Hercules track radars, undo the zipper all the way.

Some guys quit unzipping when they get near the bottom. Then they catch their brogans on the radome as they climb in. That's rough on the cover and they let themselves in for a fast trip inside.

Another thing . . . shut off the blower motor before you unzip. You can ruin the zipper by opening it with all that air pressure being generated in the radome.

DUST 'EM



How about it?

When's the last time you eyeballed the insulators in the rectifier section of your 18 KV Nike-Hercules track radars' power supplies?

If you're letting them gather dust, you're setting up things for a fireworks display . . . cause that high voltage stuff uses the dust to dance its way across the insulators.

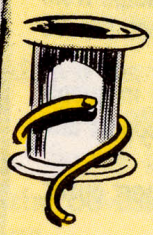
So dust 'em every now and again—more often if you're in a dusty spot. But—**short the terminals to ground before you touch the insulators.**

MAKE IT SIX BITS

You been having trouble with the drive belt for the equipment cooling fans in your Nike BC and RC vans? That'd be the kind of trouble where the belt slips.

You can probably put the blame on the belt slack—too much of it. All you need is ¾ inch . . . and you figure this with about five pounds pressure being applied at the midpoint of the belt.

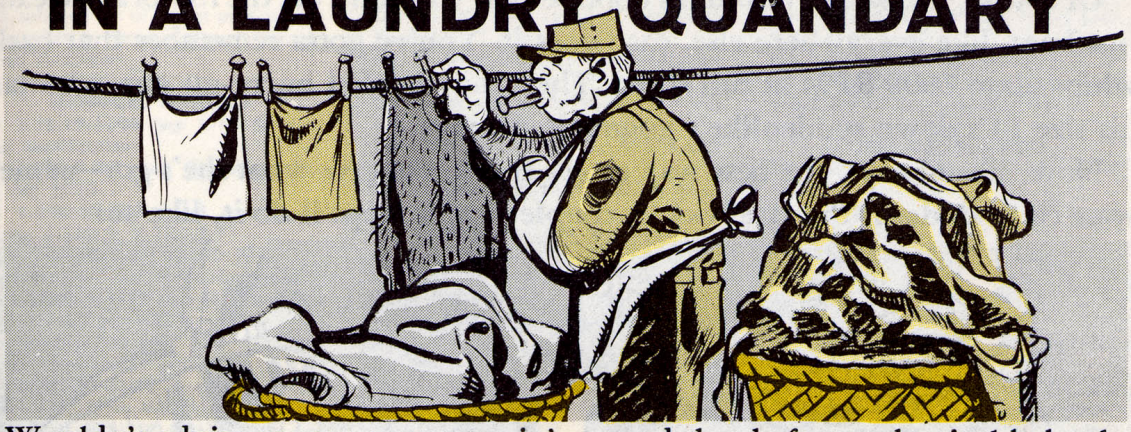
NEED SOLDER, SOLDIER?



So you're hurting for solder 'cause it didn't show up in ORD 7 SNL Y4 Section 6 (29 Sept 58)—the supply manual that replaced the one that came out in April, 1957, for the Nike electronic shop.

So you fire off a requisition to the Ordnance people and tell 'em you gotta have Solder, lead-tin alloy: wire, rosin cored, 3/32 in dia 50% tin content, FED-QQ-S-57 lb., FSN 3432-237-8544.

IN A LAUNDRY QUANDARY



Wouldn't advise anyone to go messin' around that hefty mechanical babe that does your outfit's laundry. She just might up and mangle you 'stead of extracting the wash.

Could happen, y'know, if you try to hustle her bustle by yanking open the extractor cover lid and dipping a grubby paw into the swirling mass of duds.

That lid's part of a safety interlock system on two-trailer units to protect guys who can't wait. (You'll find these interlocks on all the models—TLMW-51, PLMW-51A, TUA-1 and TLMW-55).

The interlock gizmo's there to keep the lid from being opened till the extractor basket stops spinning. If that cover can be lifted enough to slide a hand under it, the safety lock's kaput. Don't operate it till it's been fixed.

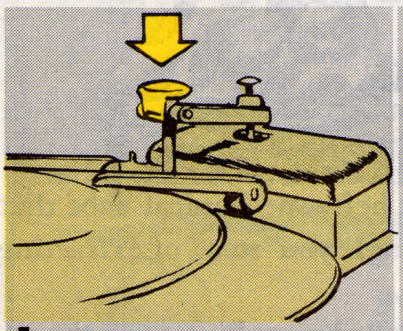
Forcing up the cover'll snap off the taper pin in the interlock cam and bend the arms that connect the cover to the interlock cam hinge shaft. This'll cripple the safety set-up real bad. That pin, y'know, controls the action of the interlock finger, the gimmick that shuts off the extractor motor when the interlock handle's pressed down.

The other half of the safety deal—the one that locks the cover down while the basket's spinning—is a humdinger too. It's made up of a ball race with two big steel balls inside a cap attached to the interlock handle between the cover hinge and the manual starter. When the motor's running, the balls whirl on the outer rim of the race where they line up with the rim of the ball cap. This keeps the interlock handle from being pushed down enough to open the cover.

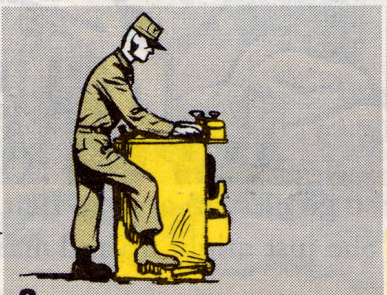
But when the extractor motor's shut off the balls begin to settle down on the inner rim. And when the basket stops spinning the cover can be lifted.

Of course, the basket'll spin till doomsday if you don't use the footbrake treadle. But here, like everywhere else, easy does it. You've gotta remember that basket whips up to 1800 RPM at full speed. The heavy-hoofed hurry-up guy who jams his size 14's down suddenlike's gonna do damage.

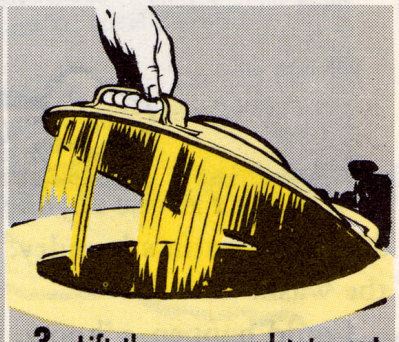
Now, like always, the best way to get this job to give what she's got—namely, your clean duds—is the safe way. A couple simple steps'll do it, like so:



1. Hit the interlock handle lightly to shut off the extractor motor.



2. Play the foot brake like you would on your own jalopy on an icy road—in spurts—till the basket stops spinning.



3. Lift the cover and take out the clothes.
Simple and safe.

And how about on your Quartermaster SPV's?

Gobbledygook? Heck no, just a friendly question you oughta ask yourself before that next inspection.

Unscrambled it means: Better make sure all the Modification Work Orders called for by your DA Pam 310-4 have been made on your equipment—and are entered on DA Form 478!

Here's why: TM 10-1400 (1 July 58) and TM 10-1600, Change 4 (23 May 58)—the "bibles" of special purpose vehicles and equipment and materials handling equipment—both tell the inspector to check that all current MWO's have been done and to hand out gigs if they haven't.

So-o-o-o, it'd be smart to right quick do some snooping of your own. You MHE men, see how you stand under Item 108 in the TM and on your DA Form 465. SPE and SPV men, look into Item 5 of DA Form 10-103 and of your equipment's bible. And, all of you, make sure those MWO recording plates are attached to your equipment, like they're supposed to be.

A selected list of recent publications of interest to Organizational Maintenance Personnel.

TECHNICAL MANUALS

TM 1-1L-19-1006 Sep L-19 Survival Seat Modification
TM 1-5F8-5-2-1 Aug Directional Gyros AN 5735
TM 1-35C-23-311-4 Jul Aux Power Plants, V-32D-2, V-32D-2-1
TM 1-1H-19D-4 Jul H-19D Parts
TM 1-1H-34-2 Jun H-34 Handbook
TM 3-1040-201-12 Aug Skid Mtd Gas Disperser M2 5000 CFM
TM 3-1040-205-20P Aug Trk Mtd Flame Thrower M4
TM 3-2805-200-12 Aug 2-Cyl Gas Eng 8.5 HP Onan Mod ACK-F/352C
TM 3-6665-201-20P Aug G-Agent Automatic Alarm. Fixed Installation
TM 5-2410-204-20 Aug Diesel Tractor 30,100 to 42,000 DEP
TM 5-2805-200-15 Aug Outboard Motor 25 HP West Bend Mod G-35912
TM 5-3895-210-12 Sep Cement batch plant (Boardman Mod 5819)
TM-5-4310-211-20P Sep Compressor recip, 80 CFM 5000 PSI (Joy Mod 80-HGC2-MS-1 and Joy 80-HGC3-MS-1)
TM 5-4520-201-15P Sep Space heater, 60,000 BTU
TM 5-4940-204-15 Sep Steam Cleaner (Aeroil Prod Mod B-3B)
TM 5-6115-216-20 Sep Gen, Gas Eng, 5KW Hol-Gar Mod CE-52M-AC W/Cont Eng
TM 5-6115-223-20P Sep (gen set 150 to 165 KW (Cummins)
TM 5-6115-228-20 Sep (gen set 60 KW (Jeta Mod MD 601815 W)
TM 5-6115-229-20 Aug Gen, Gas Eng, 5 KW Hol-Gar Mod CE-55-AC/WK6 w/ Cont Eng
TM 5-6125-202-20P Sep Motor-Gen 45 KW 60C Input 400C Output Hollingsworth Mod JHMX 45B
TM 5-6125-205-12P Sep Motor-Gen30 KVA 60C Input 400C Output Hollingsworth Mod JH30-FCU
TM 5-6125-206-12P Sep Motor-Gen 30 KW 60C Input 400C Output Hollingsworth Mods JH-32, A, B, C, E, F, G.
TM 5-6230-201-15 Aug Searchlight 18-in 26-v Tank Mtd.
TM 9-207 Sep Ordnance Materiel in Cold Weather
TM 9-1440-251-10 Jul Nike-Herc
TM 9-2805-219-12 -20 Sep RCAT Eng Mod 0-100-1 (McCulloch)
TM 9-4910-213-10 Sep 400 Amp Test Stand
TM 9-5048-12 Aug Corporal II Erector M2
TM 9-5056-12 Sep Propellant Servicing Truck M258
TM 9-5076-20 Aug Corporal Battery Control Center Intercon Gyp OA-771/G
TM 9-6650-212-12 Sep Observ Telescope M49
TM 11-1520-203-12P Sep H-37A Avionics
TM 11-5805-250-10 Aug Teleg Terms AN/TCC-4, AN/TCC-20
TM 11-5805-243-12 Sep Tel Set TA-1/PT
TM 11 5815-204-20 Sep Radio Teletype AN/GRC-46
TM 11-5820-204-15 Sept Radio Term Set AN/MRC-69(V)
TM 11-5820-229-10P,-20P Sep Radio Transmitter T-208/U
TM 11-5820-286-12P Sep Radio set AN/SRC-8, 8X, 8XX, 8Y, 8Z, 8AZ
TM 11-5820-345-12P Radio Term Sets AN/TRC-3A, B, C, D, E, G, H
TM 11-5820-346-12P Sep Radio AN/TRC-1A, B, C, D, E, G, H
TM 11-5821-212-20 Aug Radio Trans AN/FRT-51
TM 11-5826-205-12P Sep Radio Receiver AN/ARN-32
TM 11-5830-220-10 Sep Audio Freq Ampl AM-1003/6
TM 11-5840-208-10P Sep Radar AN/MPQ-4A
TM 11-5840-219-12P Sep Coord Data Set AN/TSQ-36
TM 11-5841-211-12P Sep Switch Assy SA-418/ALR-8
TM 11-5895-21210P Sep Radar AN/APR-9B
TM 11-5965-207-12P Sep Hand/Headsets H-81/U, H-81A/U
TM 11-5965-235-12 Aug Headset-Mike Kits MK-400/G, MK-401/G
TM 11-5985-200-12P Aug Antenna Group AN/ARA-31
TM 11-6115-204-10 Gen, Gas Eng PU-286A/G, B/G
TM 11-6125-200-10P Sep (Generators PU-20/C, 20A/C, 20B/C, 20C/C, PU-33/C
TM 11-6230-204-12P Sep Spot-light set AN/PVQ-1, AN/ PVQ-1A
TM 11-6625-200-12P Sep Multi-meter ME-26B/U
TM 11-6625-204-12 Aug Teletype Test Set TS-785A/GG
TM 11-6625-240-12P Sep Test set TS-27/TSM, 27A/TSM, 27B/TSM
TM 11-6625-264-15 Aug Instr Multi MX-200/U
TM 11-6625-298-10P Oct Ohmmeter ZM-21/U, ZM-21A/U
TM 11-6625-317-12P Sep Test Set AN/URM-90
TM 11-6645-200-12 Sep Var Contrast Timer FM-139A
TM 116720-203-20 Jul Still Pic Camera KA20A
TM 11-6720-207-10 Sep Still Pic Camera KS-53A
TM 11-6740-215-20P Sep Photo Drier PH-679C/U
TM 11-6760-202-10 Sep Air Camera Mt LA-116A
TM 39-T281-2 Sep T281 Test Set
TM 55-1940-202-12P Aug Boat, Pkt, diesel, 36½ ft design 243-B
TM 55-2210-203-20 Sep Diesel Loco 0-4-4-0 60 Ton Lima-Hamilton

LUBRICATION ORDERS

LO 3-2805-200-12 2-Cyl Gas Eng. 8.5 HP
LO 5-3810-207-20-1, -3, -4, -5 Aug Truck-Mtd 3/4-CuYd, Quick way Mod 200 w/Continental Eng Carrier
LO 5-4310-200-15 Sept Recip Compressor 15 CFM 175PSI Champion Mod OEG-458-ENG, gas or elec drive.
LO 5-4940-204-15 Aug Steam cleaner Aeroil Mod B-3B
LO 5-9104-1, -3 Aug Oxy-Nitrogen Gen/Charg Plant, Air Product Mod Leon-20
LO 9-1450-500-10 Sep Hawk loader
LO 9-2330-239-10 Sep Trailer 3-T XM113E1, E2; 5-T XM456
LO 55-2210-209-20 Aug Diesel Loco 0-4-4-0 80 Ton Cummins Eng GE Ciass B-B-160/160-4GE747.
LO 55-2210-216-20 Aug Diesel Loco 0-6-6-0 120 ton American, GE

TECHNICAL BULLETINS

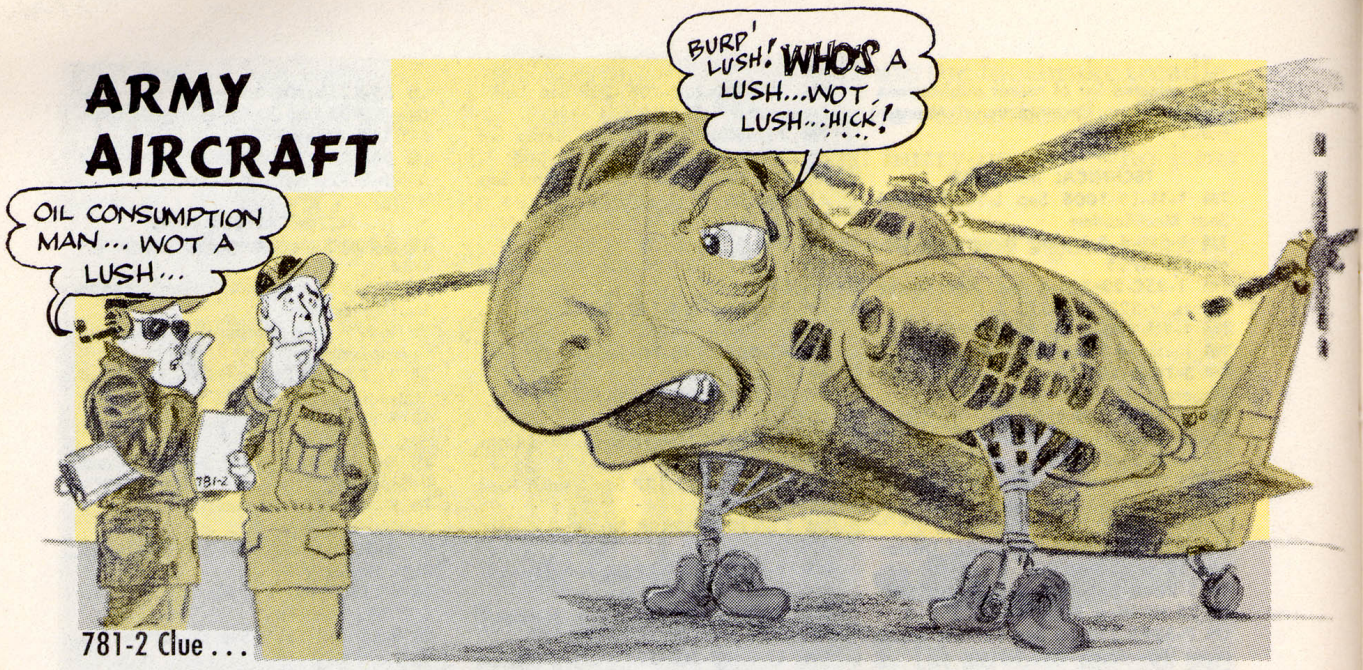
TB 3-300-5 Aug Smoke Grenade WP M34
TB 9-259 Sep M48A2 Tank Excess Starting Speeds
TB 9-279 Aug Corporal Freq-Determ Components
TB 9-282 Sep Combat Veh: Prot Insul materials on Commo Eq
TB 9-287 Sep Lightning Prot for M33, GM Sites
TB 9-1340-202-12/2 Sep 762 mm RKT warhd, M1A2, w/warhd T39E4
TB 9-2300-219-10 Sep Truck Tractor/Trailer Combinations
TB 9-2320-204-10/1 Sep Winterize M51 Heavy VTR
TB 9-2330-212-12/1 Sep 50,000/60,000 BTU Heaters
TB 9-5046-3-25/1 Sep Correct wiring Corporal II
TB 9-5078/1 Sep Ext Guidance intercom parts
TB AVN 23-5-8 Sep UER Digest
TB AVN 25-12 Sep Main Rotor damper Assy, S1610-26000 series
TB ENG 30 Sep Plastic Assault Boat
TB ORD 651 Oct Anti-Freeze in vehicles
TB QM 97 Sep Protective clothing for QM handles
TB QM 100 Sep Ice, Mtn clothing, equip

MWO'S

MWO 9-1005-208-10/1 Sep .30-cal BAR:New Gas Cyl
MWO 9-2300-202-20 Sep M48 series tanks: Remove track tension idler
MWO ORD A85-W4 Sep 4.2-in. mortar baseplate
MWO ORD J-753-1-W10 Sep Nike-item warhead hoisting
MWO ORD J-753-14-W1 Sep Nike-Herc Hydraul test 5 land M2
MWO ORD Y4-4-W1 Sep Radar Test Set TS-847A/MSW-1
MWO ORD Y31-W2, Y79-W7 Sep GM Flt Simulator
MWO ORD Y75-W2, -W19, -W24 Sep/Aug Nike launches
MWO ORD Y77-W7 Sep Missile XM-GE4: Add drain holes
MWO ORD Y77-W35, -W37 Sep GM XM6E4 Nike-Herc
MWO ORD Y79-W3, -W9 Sep/Aug Nike-Herc Trailer-Mtd Control Sta
MWO ORD Y 81-W7 Sep Nike-Herc Launcher-Centrol Selector
MWO 10-502-7 Aug Personnel Parachute Harness

MISCELLANEOUS

SM 9-4-1450-Y-72, Sep, Fuel Drain Kit, M72 Corporal
SM 9-4-5180-A01 Sep General Mechanics Tool kit/Org Maint No. 1 Common
SM 9-4-5180-A56 Aug Armorer's Tool Kit
SM 9-4-5180-A57 Aug Small Arms Repairman Tool Kit
SB 9-175 Sep Nike Test Eq
SB 9-185 Sep Rubber Stamp Kit (GM)
SB 11-485 Sep Aircraft Radio Adapter



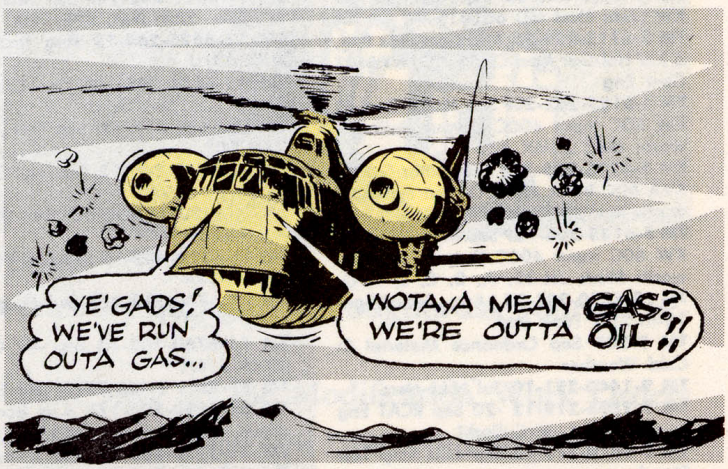
781-2 Clue . . .

How's Your Oil?

A famous man once said that if he wanted to predict how some character would act on a binge, he'd first find out what had happened on his last binge.

Exactly. And you can apply this simple and sensible reasoning to your aircraft —particularly when it comes to predicting their oil consumption.

By extracting the oil usage from the DD Form 781-2 every day and comparing it with the hours flown, you have a running record of the actual gallons per hour your particular engine or engines are using right now. And of course, you know that as the hours on the engine increase, the oil consumption will rise, too.



This information should be kept handy by both the crew chief and the operations personnel so that they'll know just how many hours of safe non-stop flight any given aircraft is capable of at the time the oil consumption was computed.

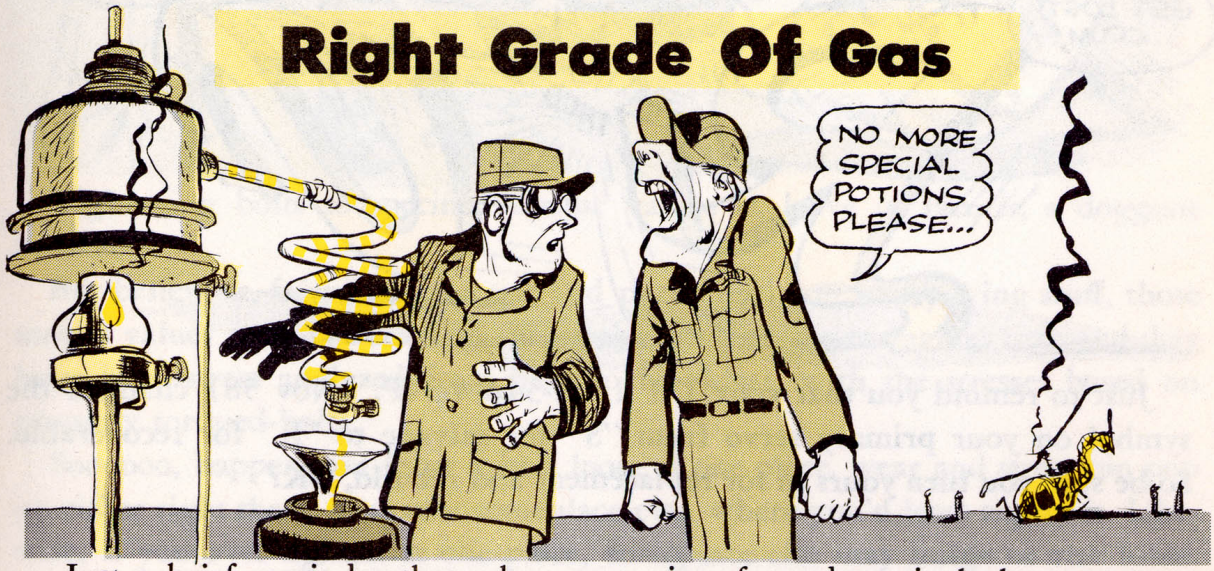
Sooo, they won't be scheduling the ship to fly so long that she's in any danger of running out of oil.

Take the Mojave (H-37) for example. Because the present power settings are higher than the original specs called for, the oil consumption is higher than was planned for. Which means those 17-gal tanks may not carry enough oil to match the fuel load of four hours of non-stop flight. (The design and test boys are working on this problem now.)

Also, as some engines approach the end of their time, they can also get to using up their available oil before they run out of fuel. Which can lead you astray unless you have a day-to-day knowledge of what your mill is eating. Naturally, the operations people will be aware of the limits of all the aircraft in the unit, and will not schedule one on a mission beyond its capacity.

So keep your 781's accurate, and watch the trends they spell out for you. Just like the weather boys with their maps—when they read the last four or five, they can make an educated guess as to what will happen on the next one.

Right Grade Of Gas



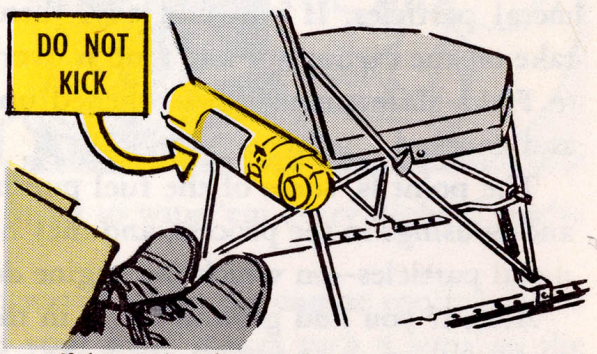
Just a brief reminder that when your aircraft, and particularly your rotary wing ships call for a certain grade of fuel, that is just exactly what they need.

As everybody knows, using too low a grade will result in detonation and engine damage, especially under maximum power settings. But not everyone is as aware that using a higher grade than is called for can give you lead fouling troubles, and if carried to extremes can even result in burned valves.

So feed her according to the official menu.

And That's No Eyewash!

As you know, the Army's type A-20 chloro-bromo-methane fire extinguisher is a little jewel—it has a fire-fighting capacity all out of proportion to its size and weight, judged by the older extinguishers.



But, one thing—that fluid is noways good for your eyes. Cases have been reported where a man set the extinguisher off by mistake and got the fluid in his eyes, causing severe chemical burns and serious injury.

OK, so first of all, always treat the little rascal with respect—don't kick! Particularly in Bird Dogs and Chickasaws, you've got to watch yourself.

And then, if you should set one off and get hit by the fluid, wash as quick as you can in lots and lots of water, rinsing your eyes good if they were hit. And then report to the dispensary as soon as you can. After all, C-B-M is kissin' kin to carbon tetrachloride, so treat it accordingly.

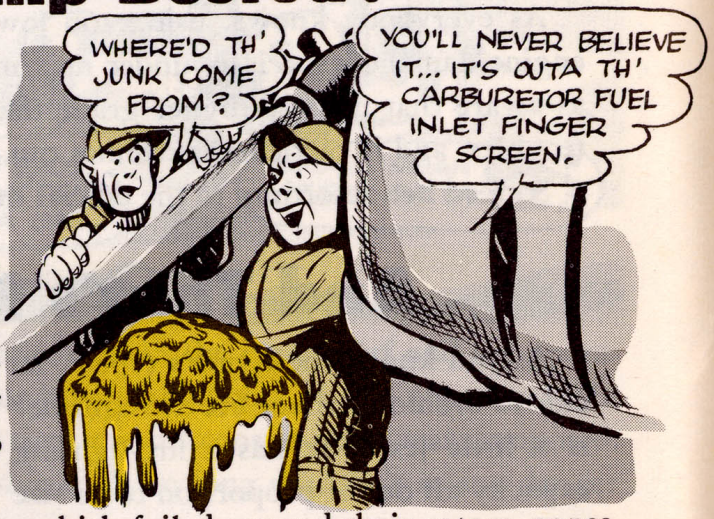
Save The Servos

Just to remind you that your TM 1-1H-34A-4-34P, (Nov 58) changed the symbol on your primary servo from "S" for salvage to "R" for recoverable. So be sure you turn yours in for replacement and rebuild, OK?

Beaver Pump Busted?

Now and then you may have to replace a fuel pump on one of your Beaver (L-20) aircraft. They have been known to wear out or fail.

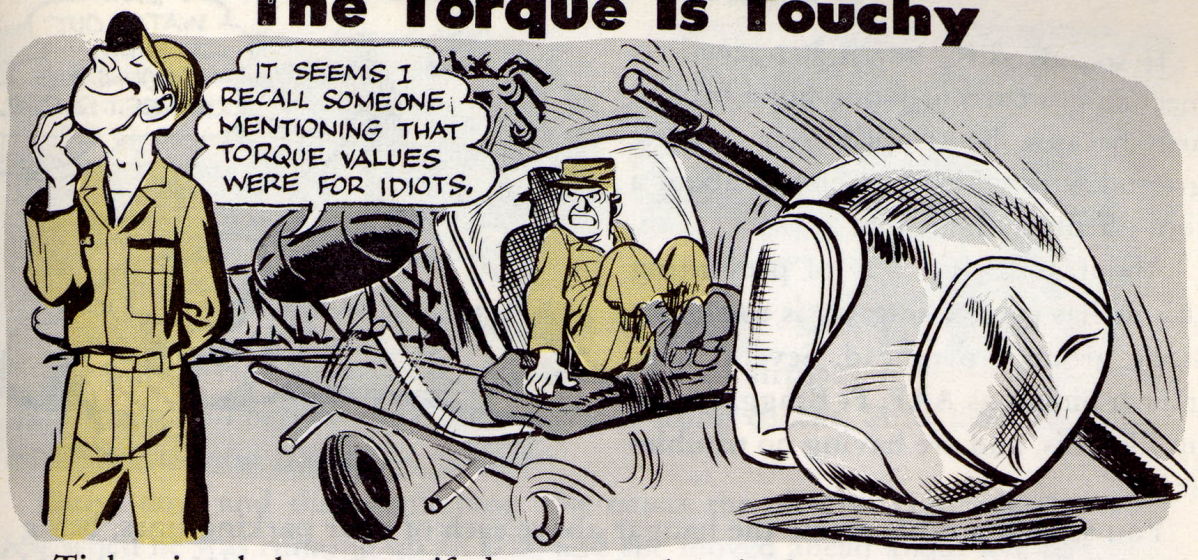
So, play it smart when you change the fuel pump—also pull the carburetor fuel inlet finger screen and look for metal particles. If you find any, then take off the carburetor and send it over to Field Maintenance to be opened up and checked.



The point is, some of the fuel pumps which failed ground their rotors, vanes and housings in the process, and they have been known to fill the carburetor with metal particles—on which the engine does not run so good.

Also, if you find ground metal in the carburetor, then you'd better check the engine oil screen, particularly if the aircraft was flown in cold weather and the oil dilution system was used much just before the pump went out.

The Torque Is Touchy



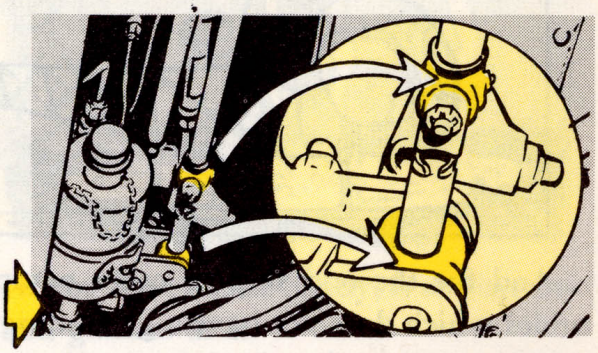
Tightening bolts to specified torque values is, leave us face it, a doggone nuisance.

But believe it, friend, on aircraft and particularly on rotary wing stuff, those torque values must be followed. Whirlybirds are tricky enough at best, and they have been stress analyzed from here to breakfast, with the stresses based on properly torqued bolts.

Soooooo, happen you leave a bolt loose at one place, wear and stress can pop up either right there, or maybe someplace else, where you'd least expect it. Likewise, if you over-tighten at one place, someplace else may bulge or run loose.

All of which means, nuisance or not, that you can't neglect those torque values. You'll find most of 'em in your —2's, and any not covered there can be looked up in TM 1-1-1A-8 (6 Dec 54).

Sioux Servos Spotless



Sure they are, but now and then somebody gets careless and lets dirt accumulate in the tops of the Sioux (H-13) servos, which in time scores the piston rod and leads to hydraulic leakage.

Until something is done to cover this area you'll want to be extra careful to wipe any dust and dirt off your servos. Every pre-flight, for sure, and it isn't too much to wipe 'em every flight if you're operating under dusty conditions.

LOOK OUT: Don't try to wipe these servos while the engine cooling fan is turning—the hamburger that used to be your hand makes such a mess on the cylinders.

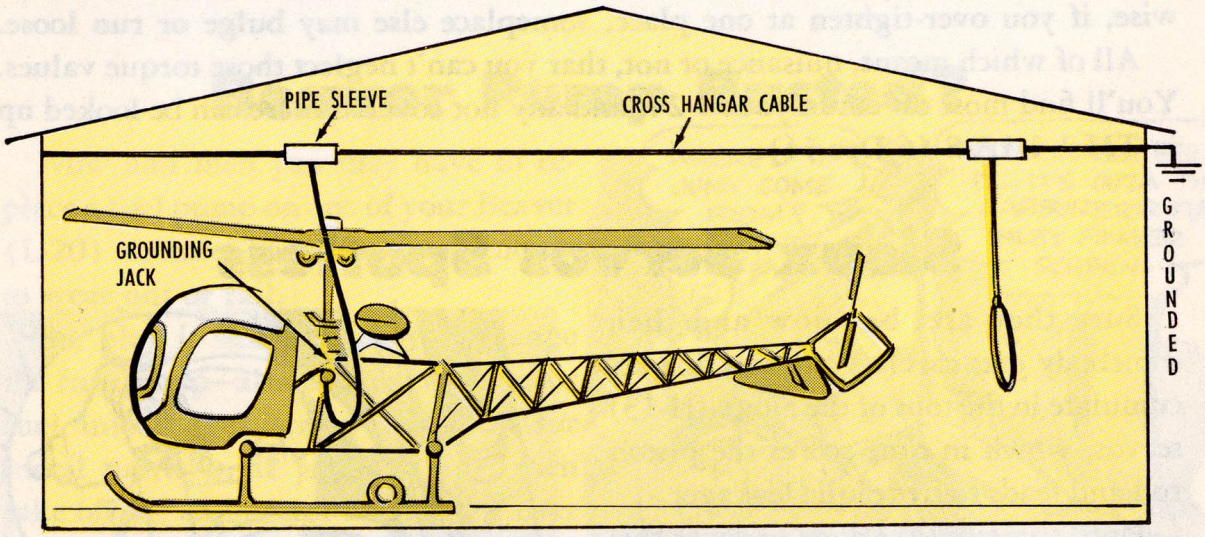
Static Grounds

It sounds silly, but it happened. A mechanic is currently nursing a broken arm because he tripped over a static ground wire which was rigged about a foot off the hangar floor.

About as slick a way of preventing this as has come along yet is to rig the static grounds overhead. Several hangars at Simmons AAF, Ft Bragg, are set up like this, and are having no troubles at all.

You stretch a cable across the hangar above each of your parking lines, being sure that it is well grounded to the steel structure of the hangar. (If you should happen to have a wood framed hangar, continue the cable to a good ground, water pipe or driven ground rod.)

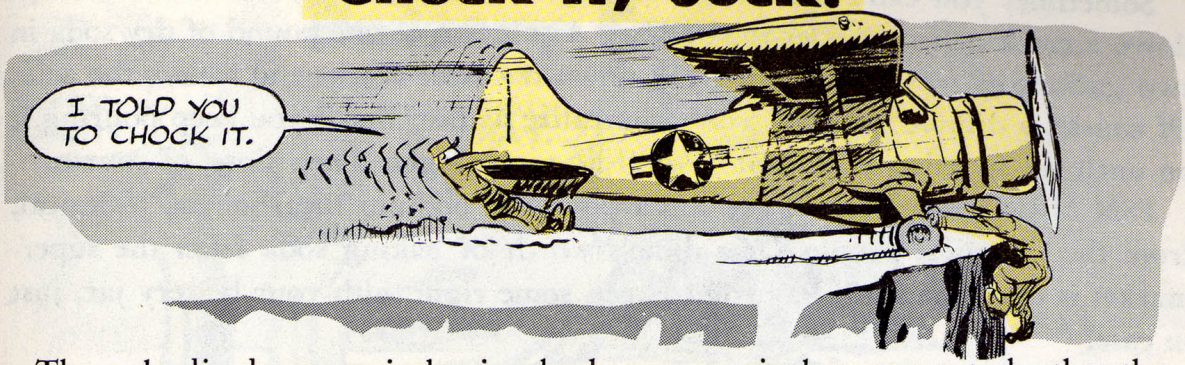
On this cable you set about one six or eight inch length of ¼-in pipe or tubing for each aircraft you have room to park under that cable, and perhaps a couple of extras. To these pipes are attached drop cables long enough to reach the hangar floor, with perhaps just a little slack. Naturally these drop cables end in grounding plugs to fit the grounding jacks on your aircraft.



And for the odd ship or other equipment that may be located under these cables which does not have a grounding jack, a short adapter can be made, with a jack on one end and a battery clip on the other. Also, of course, a few extension cables, jack on one end, plug on the other, will let you reach out to ships you can't conveniently locate directly under the overhead wire.

Such a system will take you a little time to rig, but then you won't have a bird's nest of grounding wires on the floor to flip you on your face.

Chock It, Jock!



The only disadvantage in having brakes on an airplane seems to be that they tempt people to run up the engine without using chocks. Sure, sure, the brakes will hold it—most times!

Only, now and then something else enters the picture. Figure how the guy felt when he was running up an L-20 and she moved ahead about five feet when he did his full power check. The brakes were on, the wheels were not turning—and fortunately, he ran off the oily spot before he hit anything—and without nosing over when the wheels hit the dry surface!

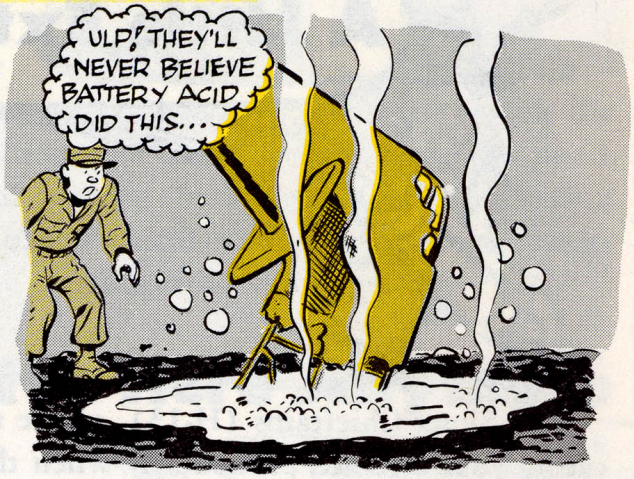
So, check the surface of your run-up area and put the chocks under your wheels any time you're running up an engine anywhere except immediately before take off. It only takes a minute and may save the aircraft, complete w/**you**, from a nasty smash.

Kill The Acid

We thought everybody knew how important it is to neutralize any spilled battery acid immediately, particularly around aircraft.

But, sad to say, a couple of ships had to go back to depot for extensive sheet metal work because of spilled battery acid.

OK, so you spill some acid, or some electrolyte, when checking a battery—What next?



Well, one of the best things you can do, if you have a hose handy, is to liberally flush the spill with plain water, gallons and gallons of it.

Or, if you have no water, or for any reason can't sluice it around liberally, dry sodium bicarbonate (baking soda) or sodium carbonate (washing soda) will kill the acid before it can bite into the metal of your ship. Just pour the soda onto the spilled acid, stir it around with a stick until the foaming stops and then wash the area with water.

Sometimes you can't follow the acid spill with dry soda, like when it drips down a crack or runs under the battery. A solution of one pound of dry soda in two gallons of water will run right down the same cracks and follow the acid. Of course, a diluted solution won't neutralize as fast, but if you keep pouring it on until the foaming is all done, you'll be pretty right. Then rinse, of course.

FSN 6810-264-6618 will get you a pound of Sodium Bicarbonate, technical, from the Chemical people. Or a dime's worth of baking soda from the supermarket is the same stuff. Pay you to keep some right with your battery jar, just in case.

H-19 Hidden Fitting

Just a brief reminder to Chickasaw people: Don't overlook that forward-facing grease fitting on the input splined coupling at your tail rotor gearbox input.

People have been known to forget this one, since it is a little out-of-the-way. But a grease-starved coupling won't make your bird fly any better, not a bit.

As you can see, you need a flexible-nozzle type grease gun to get at this one. And, like any other shaft coupling, you don't want to pump it so full of grease that you lose the flexibility.

A Little Extra, Please

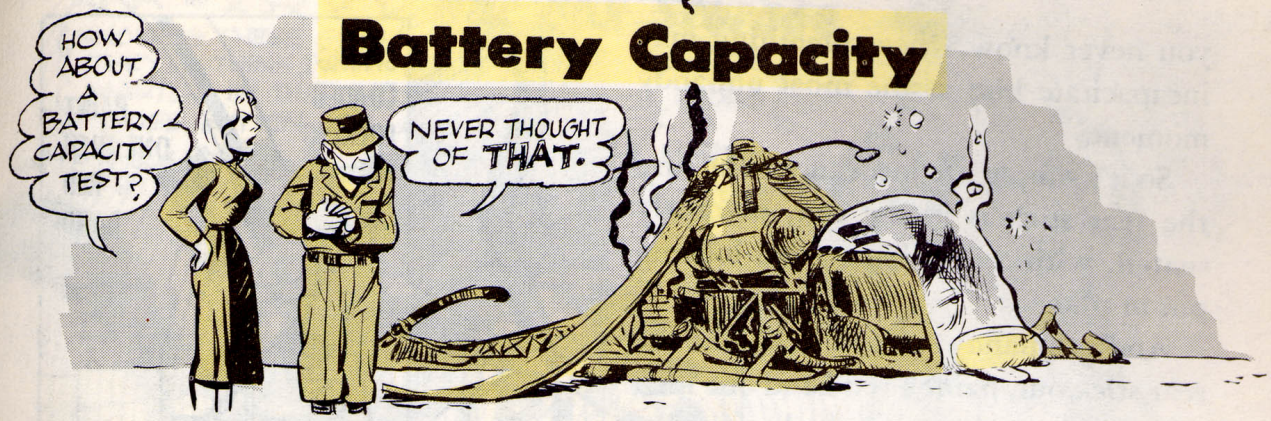
You Sioux Chieftains (H-13), please to be a little bit eager, like when lubricating your aircraft, particularly when they are flying in very dusty conditions.

The manuals give you the minimums, of course, but a real sharp crew chief goes a little farther—and his aircraft goes farther for him.

This doesn't mean that you stand there and pump so much grease into your tail rotor drive shaft couplings that you grease lock 'em, or anything as silly as that.

But it does mean that you get out and do a little extra greasing and a lot of extra wiping, so that you aren't using a mixture of sand and grease to grind the bejabers out of your moving parts.

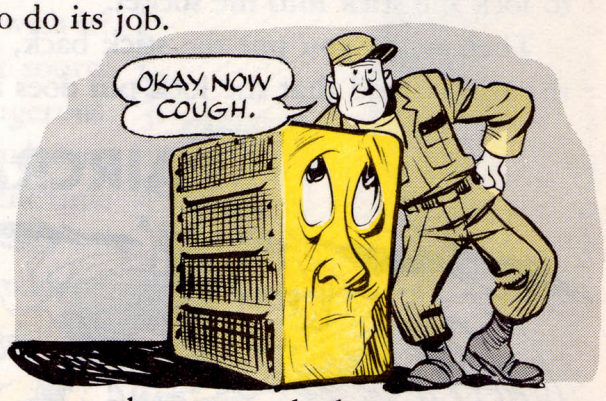
Battery Capacity



It seems that even those aircraft mechanics who are pretty good about checking the electrolyte level and the specific gravity of their batteries sometimes tend to get a little lax about the battery capacity checks.

OK, so you know it's a field maintenance test, and it can be a nuisance running your battery over to be tested.

But, the thing is, a battery that checks out fine on specific gravity—in fact it can be fully charged—still may not be able to do its job.



The only way you can find out is by way of the battery capacity test. This is sort of a physical fitness test for the battery and measures its actual capacity for work.

As you know, these tests are due every four months. It'll pay you to have one made any time your PE falls in the fourth month since the last one, because you can best spare the battery while the ship is down for inspection. (Like section 5 of your —6 handbook tells you.)

But, in addition to that, have a special capacity check any time you are having persistent or unexplained electrical troubles. Particularly if your generator checks out for proper output but you still have starting troubles or low battery.

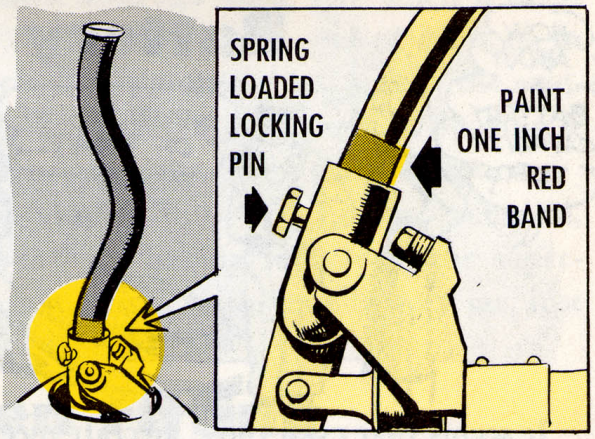
And He Doesn't Live Here Anymore

Or anywhere else for that matter. Can you imagine how silly an instructor pilot must have felt when he rode into a recent fatal accident sitting in the rear of a Bird Dog (L-19) with the rear stick not in place?

There's never any reason for an IP, to ride the rear seat of a Bird Dog when performing IP duties without installing **and checking** the rear control stick. You may have the most competent pilot in the world flying in front of you—but

you never know when something may incapacitate him at the **most** unhandy moment.

So it's simple life insurance to be sure the rear stick is in the slot, **properly seated,** with the spring loaded locking pin **in place.**

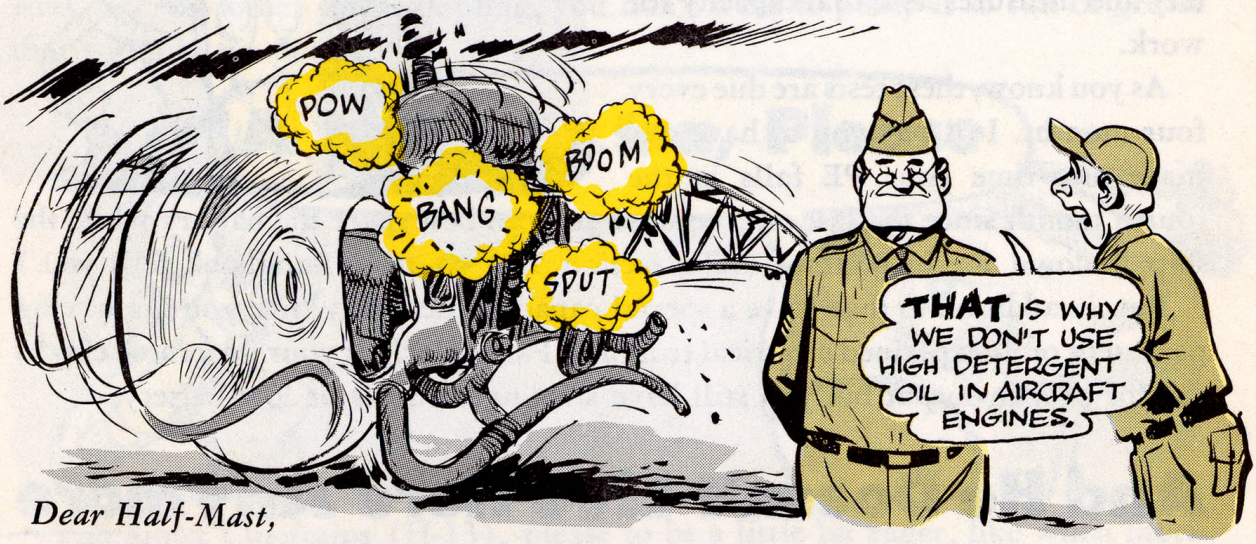


And as a handy safety check, take the rear stick out, paint a red band one inch wide on the end, so that the lower edge of the band is one and three eights of an inch from the bottom of the stick. Then when the stick is properly seated, the lower edge of the band will be flush with the top of the socket.

And at the same time check the locking pin for freedom of action and freedom from corrosion, distortion, etc. In short, make sure that it is fully ready and able to lock the stick into the socket.

Then when you put the stick back, make sure that it does properly bottom in the socket, and that the lock pin does in fact lock it right.

AIRCRAFT OIL



Dear Half-Mast,

Why don't we use high detergent oils in aircraft engines?

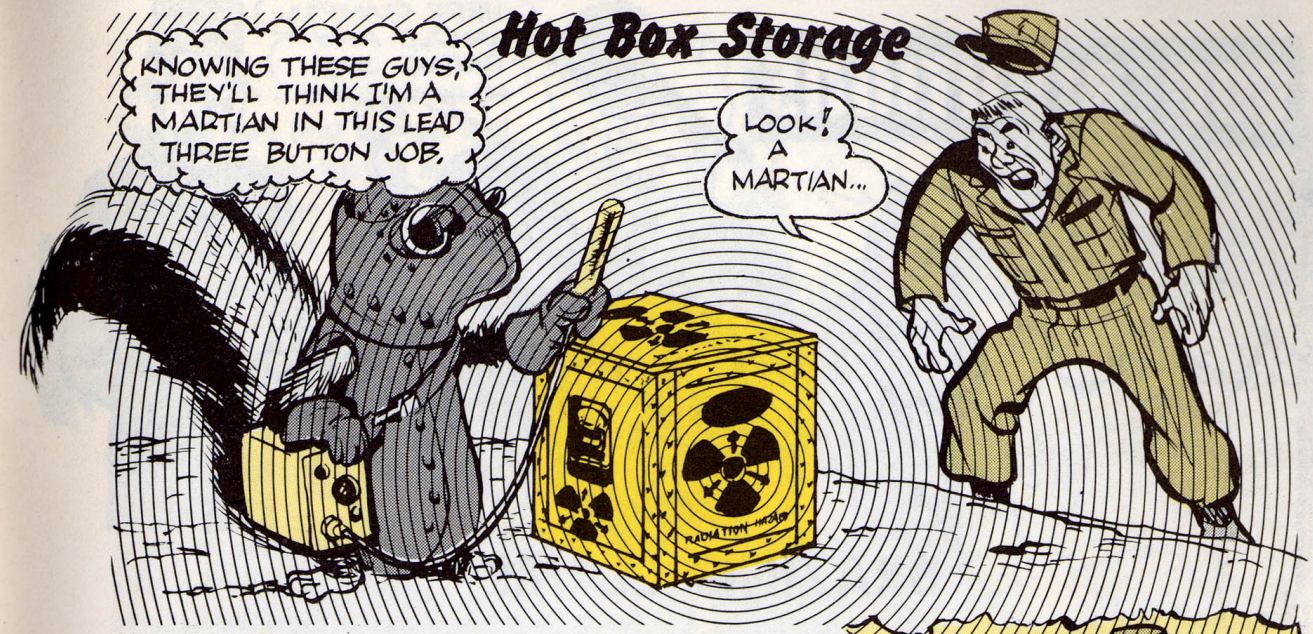
SP5 J.F.B.

Dear SP5 J.F.B.,

On account of the high cylinder-head temperatures and high oil consumption of air cooled aircraft engines compared to vehicles. The detergent compounds in oils are metallic, and in an air cooled engine they build up ash deposits in the combustion chambers.

Like carbon flakes, these deposits get hot and cause detonation and pre-ignition.

Half-Mast



You've probably been pretty well filled in on how to handle that Radioactive Source Set M3, but what do you do when your through with it?

As you know, the radioactive cobalt source gives off gamma rays which are dangerous. When you absorb them, they could do you harm. You've gotta treat it like a hot potato all the time —even in storage.

Your M3 sets should be stored in a permanent-type building, such as brick or concrete, in an unoccupied and isolated area.

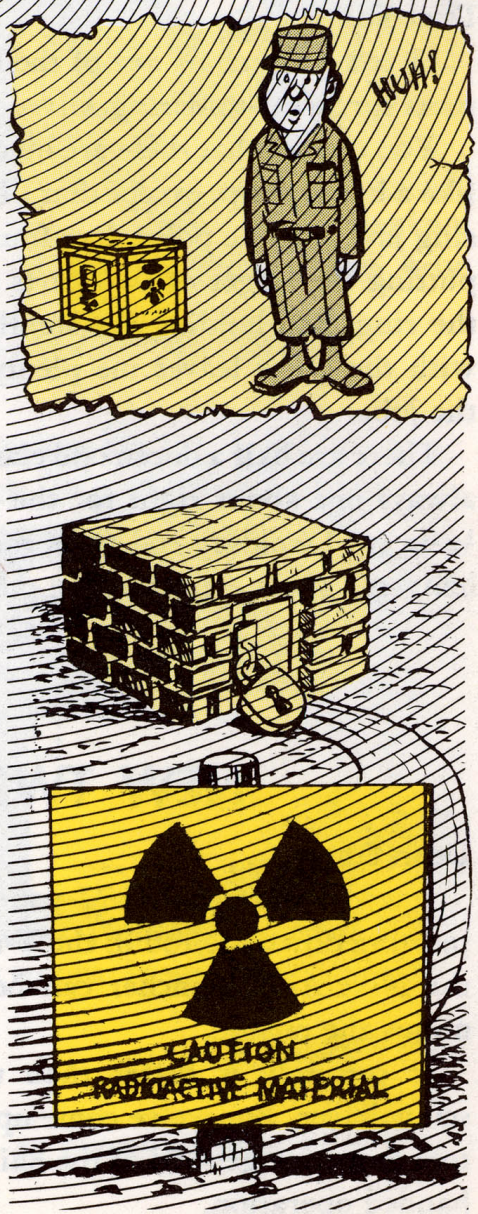
Here are some things to keep under your thinking cap when it comes to storage.

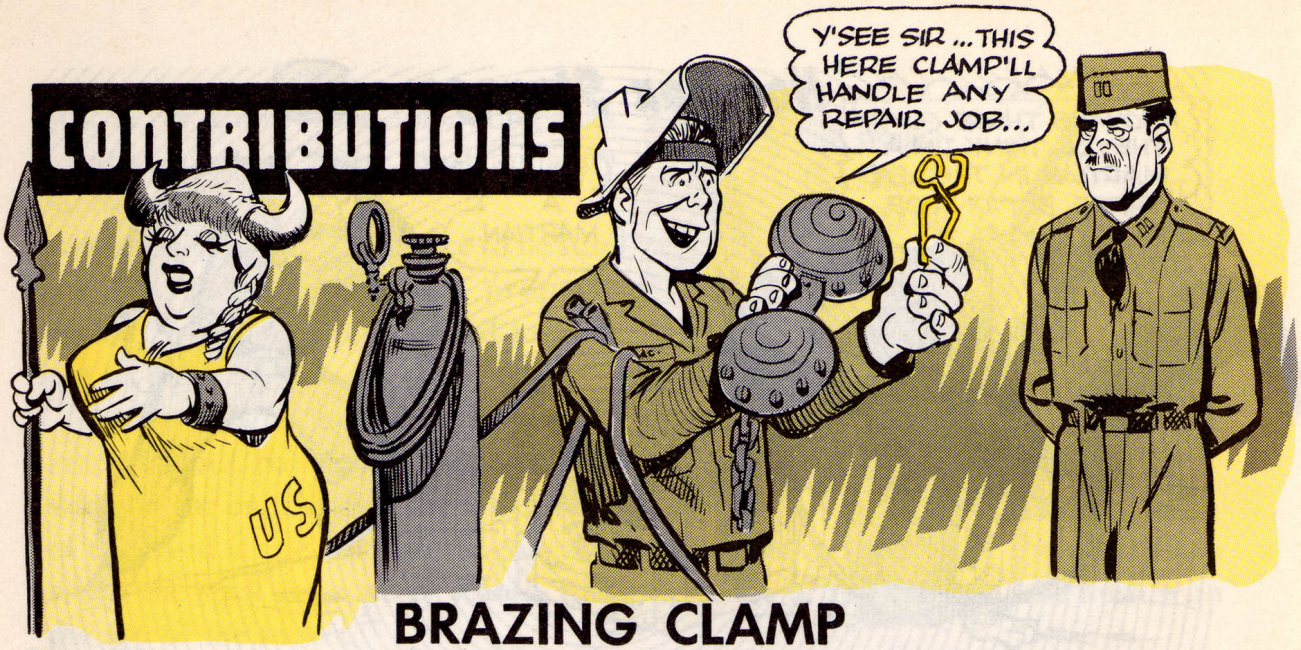
In the first place you can store up to 10 sets safely in one area if the men that are in the area for more than eight hours are at least eight feet away.

When there are from 10 to 20 sets stored in an area, keep at least eight feet from stored sets and don't stay in the area for more than eight hours.

HOLD IT! Warning signs have to be posted so you can see them no matter which way you enter the area. Go into the storage area only if you're authorized to, and stay there for as short a time as possible.

When you do go into the storage area, make sure you're wearing that Signal Corps film badge.

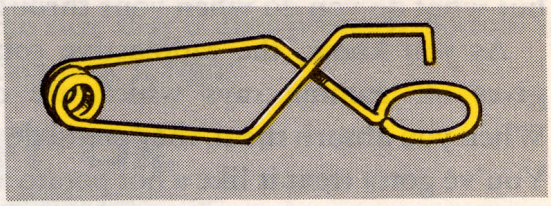




BRAZING CLAMP

Dear Editor,

Here's a sketch of one of the bent wire clamps I have made up to hold small parts for sweat-soldering, silver-soldering or brazing at my welding bench.



You can see that these are made sorta like a battery clip, except that I like one ring jaw and one point. I've found that putting the larger of two parts next to the ring, and holding the smaller part with the point leaves me plenty of room to get the torch and solder in around the job.

There are half a dozen odd clamps on my bench, made in different sizes so there's always one about right for the job at hand. My largest one was bent up out of ¼-in steel welding rod (Gas rod, naturally) and the smaller ones were wire coat hangers. These clamps make otherwise tricky soldering jobs real simple.

OCMT Harry R. McNeal
Ft Wayne, Michigan

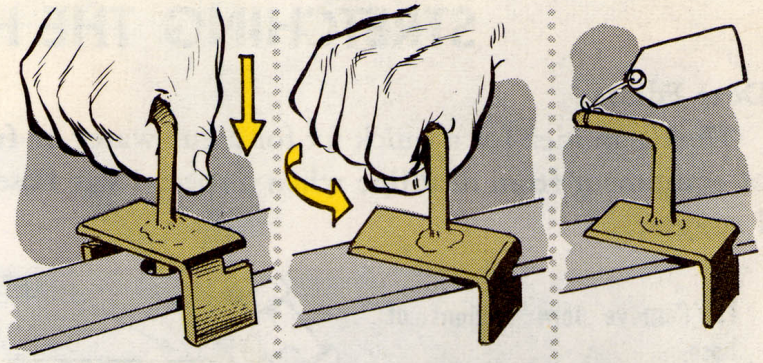
NEW TWIST TO OLD STORY

Dear Editor,

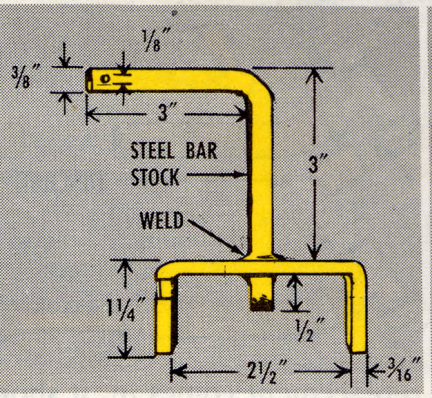
I saw that tool in PS 77 you had for pushing down the rod in the T-track so the Nike-Ajax launcher can be raised minus the missile.

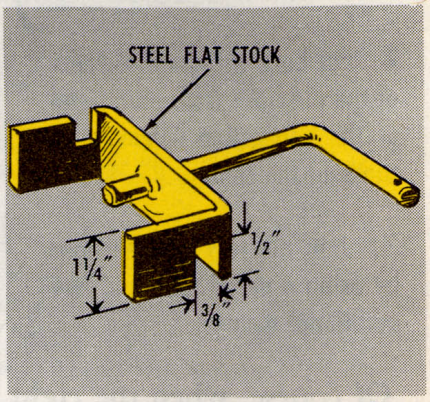
It certainly is better than using a screwdriver. But we've come up with a tool that even gets rid of the nail that is used to hold down the rod. And it's a one-handed operation.

What we do is push down on the rod and then twist the tool until the T-track goes into the notches. To make sure we don't forget the tool's being used, we attach a big red tag through the hole in the handle.



Here are the dimensions that'll let a Nike outfit's support unit knock out two tools for each launcher in jig time.



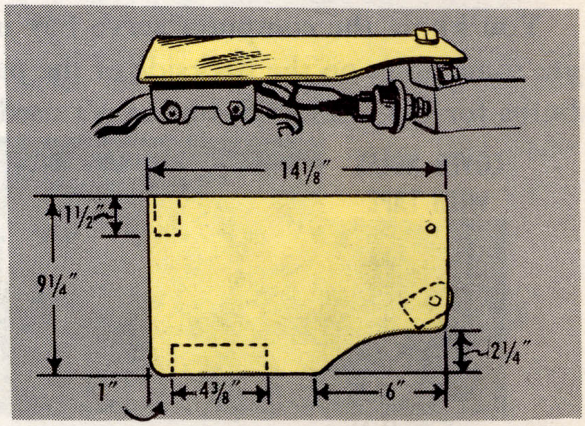


CWO Conrad Henken
B Btry, 2d Msl Bn, 65th Arty

SENDING UNIT PROTECTION SHIELD

Dear Editor,

The sending units on the CD-850 series transmissions are in an unhealthy spot. During training periods on the tank's power pack it's possible for a student to accidentally step on the sending unit and break it off.



We've come up with this protector shield. As you can see all you need is a small piece of scrap metal and a little bit of welding work. The beauty of this protector plate too is that it doesn't involve a modification to the vehicle since it can be taken off and used only while training green mechanics.

Thought I'd pass this idea on to the rest of the troops. It sure has been saving our outfit a lot of sending units.

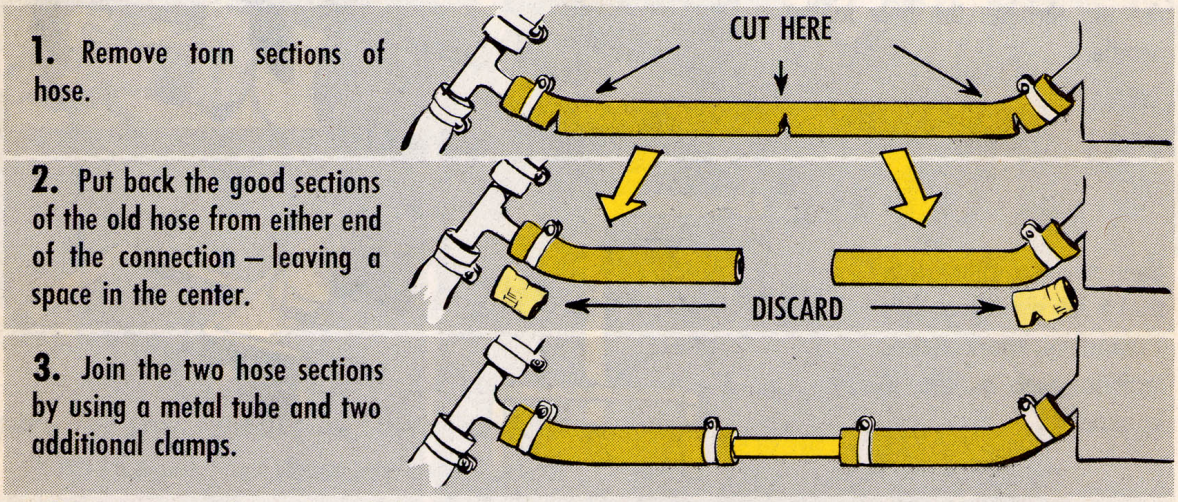
Capt Emil Stasi
Ft Knox, Ky.

(Ed Note—Sure looks like a cheap way to keep an expensive item from being stomped to death.)

STRETCHING THE HOSE

Dear Editor,

Here's an idea for a quick fix for a cut water or fuel hose. To remove a piece of equipment from deadline when a special size hose is not in stock, here's what I suggest:



Of course, when the right replacement comes in, it should be installed.

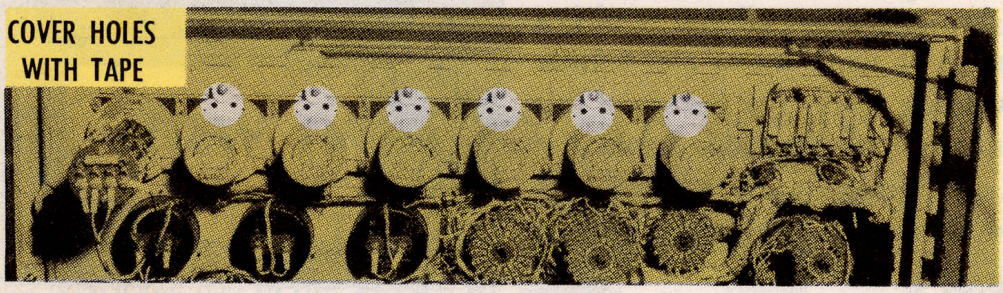
CWO Otto R. Tice
APG Md.

(Ed Note—It's a good stopgap measure. One thing you want to be careful of when using this method: Make sure that the metal tube does **not** *come close to any exposed electrical connection.)*

DUSTY POTS

Dear Editor,

You know the computer servo bay in the Nike-Hercules BC van? Well there are some holes on the backside of the parallax pots which I'm told were for light bulbs for the M33 FCS, but aren't used for Nike.



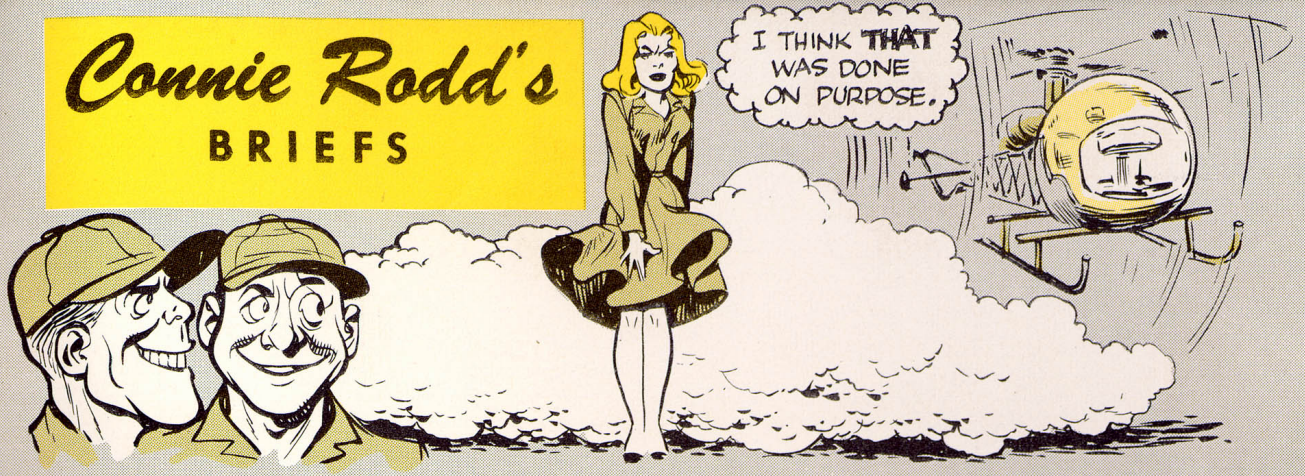
We had a lot of trouble with dust getting into the parallax pots and making them hard to read. We figured the dust was getting in through the holes so we covered each one with a small piece of tape. No dust has got in the pots since.

We use small pieces of masking tape, but any kind of tape will do.

Anton Sarge
Ft Bliss, Tex

(Ed Note—Sounds good. A Nike-Ajax guy can do the same thing.)

Connie Rodd's BRIEFS



Flash suppressor flash

When either gun of your M42 twin-40 has been fired for 1500 rounds—replace its flash suppressor. Make the change even before this if you notice cracks around the hub of a flash suppressor or the reinforcing ring. Remember, though, each gun tube is good for about 12,000 rounds.

Two for one

Got the new-type clutch and flywheel in that 5-ton G744-series truck? If the improved clutch kit's been installed, there'll be two yokes—not just one—on the clutch control linkage. If you find just one yoke, ask your Ordnance support to install Kit, improved clutch, FSN 2520-535-6915, described in MWO 9-2320-211-30/2 (4 Feb 59).

Shocking answer

MWO Y4-2-W5 is for you if you work around the Nike-Ajax acquisition radar high voltage power supplies. The urgent MWO does such things as change the shorting bars, relocate the interlock switches and tells about putting a protective cover on the acquisition high voltage power supply. This makes maintenance easier 'cause you can work without wondering when you're going to get knocked on your backside. Your support unit'll apply the MWO.

Detour

You have oil leaking from the R & E section of your Nike-Ajax missile? Sounds like your support unit hasn't been around to apply MWO Y2-W23 (3 Apr 59). It's a normal MWO and will be applied only when your R & E section is removed for maintenance and repair. So please not to knock down your support's door to get 'em to apply the MWO.

Strip ease

So you're having trouble with the bolt that connects the flexible waveguide to the rigid waveguide on the Nike-Hercules acquisition antenna. The bolts are stripping 'cause they don't get a good enough bite once they're tightened. Right?

The answer is a bolt with more threads between the head and the threaded end—the kind your support unit can get for you in TM 9-1430-250-35P/2. It's under FSN 5603-012-2022.

FC to MWO TB's

Don't let TB Ord 1004 and TB Ord 1005 slip by you if you're in a Nike-Ajax or Corporal outfit. Both TB's give you the low-down on the field changes that have been converted to Department of the Army MWO's for each system. The TB's are dated 12 Nov 1957.

Would You Stake Your Life on the Condition of Your Equipment?

EQUIPMENT
DEADLINED
TODAY
BN REPAIR SHOP
OPERATION SNOW BALL
DEADLINED
COULD MEAN
YOUR DEADLINE
TOMORROW...
BN REPAIR SHOP
C'MON, C'MON ...GET TH' LEAD OUT!! FASTER, WILL YA.